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BRAIN-BASED LEARNING PRACTICES OF TEACHER EDUCATORS IN AN ENGLISH LANGUAGE TEACHING PROGRAMME

*Çağla ATMACA***

ABSTRACT

Every era comes with its unique requirements and expectations in every domain of life, and education is no exception. However, there are some 'timeless' educational moves which can be always fashionable in such as brain-based learning where involvement of both hemispheres is encouraged in line with learners' needs and interests. If educators are to deliver instruction in line with the needs of brain, they should take the necessary education before stepping into their real classes, which puts the emphasis on pre-service teacher education. Thus, this study aims to find out the perceptions and practices of faculty members in English Language Teaching (ELT) Programme at a state university in Turkey about brain-based learning. This study is based on mixed-methods approach including both quantitative (questionnaire) and qualitative (interview) data collection and analysis procedures. The participants were first administered the Brain-Based Learning Survey Questionnaire developed by Shelly R. Klinek (2009) in English and then they were asked to complete written interview forms to get deeper understanding about their teaching practices. SPSS 16 and Excel programmes were utilized for numerical data analysis while content analysis was applied to interpret and categorize written comments of the participants. The findings provide crucial insights about how to implement brain-based learning methods for the benefits of student teachers in ELT programmes and thus create a learning culture among student teachers who then might implement such procedures in their future classes.

STRUCTURED ABSTRACT

English has been accepted as lingua-franca or international language used by many people with different cultures, countries and

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backgrounds. Therefore, English has become an important language to be learnt (McKay, 2010). The additional use of various and authentic materials was found to be welcomed by the foreign language teachers in spite of the physical constraints resulting from the crowd of classes or educational settings (Akpınar Dellal & Seyhan Yücel, 2015). Student teachers need to see how to make an effective learning environment for their future students, which can be enhanced with brain-based learning (BBL) opportunities offered by teacher educators. Thus, we need to question the effectiveness of teacher education programmes and see whether teacher educators implement BBL activities in their classrooms (Klinek, 2009).

There are several studies conducted on brain-based learning in different educational settings. For example, in Turkish EFL context, with the participation of 69 learners aged between 11-12, it was found that learners' GEFT scores and L2 achievement test scores were positively correlated and that field independent learners performed better on the discrete-point and cloze tests. While field dependence-independence cognitive styles were found to have significant role in learner performance, hemisphericity did not yield significant correlations (Alptekin & Atakan, 1990).

Becoming a teacher educator should not be seen as the end point of a spectrum ranging from the pre-service teacher education programmes, going on with in-service teacher education programmes and finally ending with becoming a teacher educator. Since they educate the educators of tomorrow, teacher educators need to be open to changing trends of teaching and language policies and refresh themselves in line with the needs, interests and expectations of student teachers. They should provide teacher candidates not only with theoretical knowledge but also practical solutions that will enable them to cope with the problems in their future classes (Zeichner, 2005).

The cumulative aspect of experiences and knowledge will push teacher educators to adopt their own or self-approaches in their teaching and research practices. In a narrative study with 11 teacher educators in different contexts revealed that they refer to their own beliefs and practices to shape their professional learning (Kani, 2014). As key agents of teaching-learning practices, attitudes of pre-service teachers, in-service teachers and teacher educators towards educational changes play an important role in shaping the route of these changes. In a study conducted in Czech Republic with the participation of 100 pre-service teachers, 80 in-service teachers and 88 teacher educators, it was found that in-service teachers had negative attitudes towards the changes, teacher educators had lack of concern for the changes and finally student teachers had pro-innovative attitudes toward the changes (Vrabcová, 2015). These findings show the importance of teacher educators' influence on in-service teachers and pre-service teachers because if teacher educators are conceived regarding the use or application of newer educational moves and changes, they can make a difference in the perception of pre-service teachers while lecturing. In a similar vein, teacher educators can make changes in the attitudes of in-service teachers by persuading them about the benefits of the related changes or moves.

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In light of the research findings on brain and BBL, the need to question teacher education programmes comes to fore as a crucial topic. There seems to be lack of research studies which associate BBL applications and teacher educators' professional development. Therefore, this study sheds light on an overlooked area in teacher education and aims to find out teacher educators' perceptions and practices of BBL activities by exploring the following questions:

- 1- What do the participants know about BBL activities?
- 2- What are the participants' beliefs regarding BBL activities?
- 3- What are the practices of teacher educators about BBL activities?
- 4- What kind of brain-based teaching techniques are used in the ELT programme?
- 5- What could be the factors that hinder effective application of BBL?

This study was a descriptive study aiming to identify patterns or trends in a situation and in this case the knowledge, beliefs and practices of faculty members regarding BBL. The study was based on a mixed-methods approach including given the Brain-Based Learning Survey Questionnaire developed by Shelly R. Klinek (2009) and written interview form developed by the researcher with the help of expert opinion. The participants were 23 faculty members from Gazi University, Faculty of Education, English Language Teaching Programme, who were chosen with convenient sampling for the questionnaire and with random sampling for interviews. There was a convenient sampling due to the restrictions encountered in the application so the participants were chosen according to their accessibility and proximity to the researcher. Quantitative data were analysed with SPSS 16 and excel programme while the qualitative data were analysed through content analysis (Glasser & Strauss, 1967) since the interpretation of the participant opinions requires iterative process like counting instances of words and phrases that are found in specific categories. Besides, it follows a nonlinear route since it makes the researcher move back and forth in line with the coming data (Dörnyei, 2007).

The results of the study revealed that although about half of the participants had average knowledge about how brain learns, they still felt the need to be trained about how brain learns best so that they could make adjustments in their teaching styles. This finding is in parallel with the previous studies in that it indicates that there could be more opportunities for faculty members to participate in conferences or workshops in the institutions where they work because teacher educators also go through professional development in their career (Lunenbergh, 2010) and they may seek for academic or peer support to cope with their tasks (Zeichner, 2005; Cochran-Smith, 2005).

In the interview, teacher educators in the ELT Programme at Gazi University were asked to explain how they implemented BBL in their classes. Below is the list of BBL activities used by the participants in their classes. The list was obtained from the content analysis of the

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written responses of the participants to the second item in the written interview form given at the end of the article:

Considering learner emotions, considering needs and interests, considering learner suggestions, providing alternatives, using humour, providing freedom, facilitating group and pair works, providing more classroom space for practices, using visuals, probes, realia, giving reflections, organizing social visits, using up-to-date materials, paying attention on physical needs of learners, revision of previous week, holding reflection sessions, giving and getting feedback, allowing creativity, using visualization for relaxation, using background music, creating a multi-sensory environment, reducing anxiety, offering challenges related to learning, appealing to different learning styles & strategies, meeting learner needs, offering “break state” activities, offering the think-pair-share strategy, brain gym as lead-in activity, bridging previous and new knowledge, eliciting learner ideas, using NLP (Neuro-Linguistic Programming) activities like VAKOG (Visual, Auditory, Kinaesthetic, Olfactory and Gustatory), providing flexibility, utilizing project works and individual study, using multimodality, opportunities for self-expression, offering stress-free environment and creating interest.

In the written, structured interview items, teacher educators in the ELT Programme were asked about their BBL applications and certain shortcomings. Teacher educators mentioned some problems that they encounter in their classes. They also presented some suggestions for a better brain-based teaching practice. The problems reflected were about seating, resistance against professional change, lack of their knowledge about BBL, workload, overloaded syllabus and physical environment constraints. They suggested applying the knowledge in real life, assessing goals, pre-determining learning styles and intelligences and informing teacher educators about brain-based teaching and learning to deal with these problems and enhance BBL applications among teacher candidates.

Lack of knowledge could be another reason that hinders the teacher from applying BBL because more than half of the participants (N=12 – 52.2%) agreed that they would be more willing to initiate brain-based learning if they knew more about it. It can be said that the teacher educators need training to implement various activities in their classes and in this vein it is brain-based learning. Being a teacher educator should not be seen as the end of point of teaching career since teacher educators may seek for professional help in their career. Although the participants did not reveal any information about in what forms the assistance or training could come during the interview, the training could be in the form of self-study groups and collaboration (Gallagher, Griffin, Parker, Kitchen, & Figg, 2011). When it comes to BBL techniques, the participants were in favour of using movement, relaxation, and cross lateral stretching in their classrooms and more than half of the participants (N=14 – 60.8%) hold positive beliefs about drinking water. The latter finding is not in parallel with that of Kaufeldt (1999) since not all the participants valued the importance of the physical needs of the students. As the brain has certain physical and psychological needs, we should satisfy those needs as educators

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(Kaufeldt, 1999) because in order to have learners that are ready to learn, educators should meet their needs and expectations.

New applications or innovations in education may not necessarily mean success in all domains or in all contexts. In a similar vein, brain-based learning itself may not guarantee accomplishment in the long term due to the interplay between the brain and the environment. If the necessary physical and psychological conditions could be created without obstacles resulting from the lack of sources in the educational setting or lack of teacher competencies, then teachers could educate the brain and lead their learners to build on their current status of brain power and increase their potential (Köse, 2004). Once the learners has made out how to set their brain to learn, retrieve or remember, they can turn these strategies into learning habits and contribute to their own life-long learning. In addition, if educators consider learner emotions they can remove certain psychological barriers between the students and themselves and thus build rapport easily with them. They can also increase student motivation by providing alternatives in the assignments and variety in the tasks (Calhoun, 2012). Similarly, teacher educators could show student teachers how to apply what they learn in their training so that what is learnt at university could become applicable in real classrooms, which will make learning meaningful.

Keywords: Brain-based learning, English language learning, student teachers, teacher education, teacher educators.

İNGİLİZ DİLİ EĞİTİMİ ANABİLİM DALI'NDAKİ ÖĞRETMEN EĞİTİCİLERİNİN BEYİN TEMELLİ ÖĞRENME UYGULAMALARI

ÖZET

Her bir çağ, hayatın her alanında kendine özgü gereklilikleri ve beklentileriyle birlikte gelmektedir ve eğitim alanı da buna dâhildir. Ancak öğrenen ihtiyaç ve ilgileri doğrultusunda beynin her iki yarı küresinin de işe koşulduğu beyin temelli öğrenme uygulamaları gibi sürekli popüler olan eğitimsel akımlar bulunmaktadır. Eğer eğitimciler beynin ihtiyaçları doğrultusunda eğitim vereceklerse bu eğitimcilerin gerçek sınıflarına adım atmadan önce gerekli eğitimi almaları gerekmektedir ki bu hizmet öncesi öğretmen eğitiminin önemini vurgulamaktadır. Bu yüzden bu çalışma Türkiye'deki bir devlet üniversitesindeki İngiliz Dili Eğitimi Anabilim Dalı'ndaki öğretim elemanlarının beyin temelli öğrenmeye yönelik algılarını ve uygulamalarını bulmayı amaçlamaktadır. Bu çalışma, nicel (anket) ve nitel (mülakat) veri toplama ve analiz süreçlerini kapsayan karma yöntem kullanılarak gerçekleştirilmiştir. Katılımcılara öncelikle Shelly R. Klinek tarafından İngilizce olarak 2009 yılında gerçekleştirilmiş olan Beyin Temelli Öğrenme Araştırma Anketi ve sonrasında katılımcıların öğretim uygulamaları hakkında daha detaylı bilgi edinmek amacıyla yazılı mülakat formları verilmiştir. Katılımcıların yazılı görüşlerini yorumlamak ve gruplandırmak amacıyla içerik analizi kullanılmış nicel veri analizinde ise Excel ve SPSS 16 programları kullanılmıştır. Bulgular İngiliz Dili Eğitimi Anabilim Dalı'nda eğitim gören öğretmen

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adayları için beyin temelli öğrenme yöntemlerin nasıl uygulaması gerektiği ve böylelikle gelecekteki sınıflarında bu tür süreçleri uygulayabilecek öğretmen adayları için bir öğrenme kültürü oluşturması açısından önemli bilgiler sunmaktadır.

Anahtar Kelimeler: Beyin temelli öğrenme, İngilizce öğrenimi, öğretmen adayları, öğretmen eğitimi, öğretmen eğitimcileri.

1. Introduction

English has been accepted as lingua-franca or international language used by many people with different cultures, countries and backgrounds. Therefore, English has become an important language to be learnt (McKay, 2010). The additional use of various and authentic materials was found to be welcomed by the foreign language teachers in spite of the physical constraints resulting from the crowd of classes or educational settings (Akpınar Dellal & Seyhan Yücel, 2015). Student teachers need to see how to make an effective learning environment for their future students, which can be enhanced with brain-based learning (BBL) opportunities offered by teacher educators. Thus, we need to question the effectiveness of teacher education programmes and see whether teacher educators implement BBL activities in their classrooms (Klinek, 2009).

Incorporating activities related to Multiple Intelligences (MI) by Gardner (1983) as an application of BBL into real classroom settings can enhance learner achievement and increase their motivation and participation in classroom discussions. As teachers, we should leave our prejudices regarding the optimum learning outcomes since teachers may encounter insufficient resources or support and try to arouse learner attention and help their learners gain consciousness about their potential. If we can convince our learners about their potential for success, they can increase their self-confidence and belief in success so that they could turn it into habit and refer to it in their future academic studies. Incorporating MI into educational settings could yield in positive consequences even with low grade students with learning disabilities or unsuccessful students (Köse, 2004; Pociask & Settles, 2007) but first of all we must give it a try and make more efforts as a teacher. Teacher beliefs come to the fore at this point and so do pre-service teacher education institutions. We need to have a closer look at whether teacher candidates are educated in line with brain-based learning (BBL) activities. In EFL contexts, such applications become more prominent due to the restricted linguistic input found in the learning environments. As a part of teaching programmes, English Language Teaching Programmes should also benefit from BBL activities to both educate student teachers appropriately and provide them with models that they can apply in their future classes. Therefore, this study aims to examine BBL practices of teacher educators in an ELT programme at a state university in Turkish EFL context.

2. Literature Review

This part provides the readers with the necessary background information about BBL and previous studies with their major findings in order to help the readers get the importance of BBL and point out the scarcity of the research studies dealing with the BBL practices of teacher educators. Therefore, this part presents previous studies on brain and its functions, brain-based learning, studies conducted on BBL and finally studies on teacher educators as well as in-service teachers and pre-service teachers.

2.1 Brain and its functions

We need to understand the structure of the brain and the various functions of its sub-parts to have a clear idea about how brain works and contributes to foreign language learning. Each

individual is considered unique because no two human brains are alike (Weiss, 2000). Human cerebral hemispheres are anatomically asymmetric. Left hemisphere (LH) is characterized as being dominant, verbal, analytic and intelligent while right hemisphere (RH) is described as non-dominant, nonverbal, visuo-spatial, holistic and creative (Loring et al., 1990; Sousa, 2001). Left hemisphere is also responsible for communicating with the outside world via such actions as reading and writing (Springer & Deutsch, 1998: 298), which are the two basic skills of language learning, the former being a receptive skill while the latter being a productive skill. When we look at the mid-brain, hippocampus holds immediate past memories and is called as “gateway to memory” since it navigates through the environment (Wolfe, 2001; Greenfield, 1998). Due to the important role the brain plays in learning and the structure of the brain in language learning (Glasser & Rilling, 2008), which are associated with biological aspects of the language itself (Tikofsky, 1968); attention, context and patterns, memory and recall, and motivation are among the most frequently studied topics about brain (Weiss, 2000). While there is still controversy regarding various differences in brain lateralization (Nielsen, Zielinski, Ferguson, Lainhart & Anderson, 2013), in a study females were found to have bilateral representation of language function whereas males were found to be more discretely left hemisphere lateralized (McGlone, 1980; Gur et al., 2000). Lenneberg (1967) argued that at birth the hemispheres are equal in their potential to mediate language but during development, maturational and environmental factors lead to LH lateralization of language function. As such lateralization occurs over time, damage to the hemispheres will have different effects on language acquisition (Lindell, 2006). It was reported that patients with right hemisphere problems often suffered from defects in the comprehension of emotional prosody (Heilman et al., 1975) and it was also proposed that the right hemisphere contained a prosody processing network (Ross, 1981). These research findings lead us to the involvement of both hemispheres in learning process since BBL offers more detailed explanations for learning and teaching procedures than traditional teaching methods (Caine & Caine, 2001).

Knowing the functions of each hemisphere may not be enough to guide our learners to benefit from their brains’ potential at highest level since there are also some physical and psychological needs that should be met for an effective application of brain-based learning. Otherwise, teaching may not reach the ultimate expected outcomes. These physical needs could be categorized as air, water, nutrition, sleep whereas psychological needs could be grouped under belonging, fun, freedom and power (Kaufeldt, 1999). Let’s think about the applications of these needs in English teaching. The teacher may suggest opening the windows to get some fresh air and oxygen during the break so that students will be ready to get new input in the coming lesson. If a student is hungry or sleepy, s/he may have difficulties in adapting to the lesson while trying to forget his/her hunger or sleep. As to the other side of the coin, the student’s affective filter (Krashen, 1981) can undergo certain changes in different classes due to the group dynamics. S/he may feel insecure and shut down his/her receptors in order not to receive any linguistic or cultural input. Furthermore, laughter can be effective in reducing stress but enhancing memory and attention (Jensen, 1996).

2.2 Brain-based learning

Foreign language learning is located at a junction by getting resources from various fields like applied linguistics, psychology, educational and social sciences, and it is only natural that language learning is affected by a variety of factors and uses such findings as hemispheric language dominance (Knecht et al., 2000), rule-based versus similarity-based learning (Opitz & Friederici, 2004), speech parsing (McNealy, Mazziotta, & Dapretto, 2006) and sound-to-word learning (Wong, Chandrasekaran, Garibaldi and Wong, 2011) in the discipline of neurology. From education perspective, success could be achieved by employing capabilities of the brain, which is related to how to reveal potential of the brain properly. The effectiveness of brain-based learning

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was questioned as a relevant teaching method and it was supported due to the positive outcomes like increase in student participation and achievement scores even when applied to learners with learning disabilities (Winters, 2001) so shall we use it for foreign language learning to maximize learning opportunities and create optimal learning environments? Multiple Intelligences (MI) as an application of brain-based learning activities should be on the agenda of teachers since both serve for enhancement of student achievement, behaviour, and self-esteem (Davis, 2004) regardless of the grade and age of the learners as well as the course they take.

It has been claimed that a child acquires natural languages in the first years of his/her life without explicit instruction since linguistic competence is gained with different means. As for second or foreign language, there are great individual differences regarding L2 ability because the function of the grammar centre can be modified during the acquisition of new languages (Sakai, 2005). As far as foreign language learning is concerned, the superiority of right hemisphere involvement versus left hemisphere involvement may not always hold true (Madrado & Motz, 2005) since each individual shapes and constructs the new information in a unique way in light of personal learning styles, interests and learning aims, and these specific needs exist from primary school to higher education, all of which are stressed in humanistic approach (Rogers, 1961) and constructivism (Tynjälä, 1999) as well.

Brain-based learning is not limited to a specific language skill and could be used with new technology. If consciously applied, BBL could enhance various language skills and domains because brain-based writing curriculum was found to be superior to traditional one in terms of higher levels of student enjoyment and scores (Griffee, 2007). Online environment could offer learners ample resources to which they can refer when needed without time and place limitations (Abbitt, 2007) and learners can continue to learn beyond classroom walls. In today's digital age, educators could attract learners' attention and include a number of teaching approaches and techniques via the Internet. BBL activities can also be included within online learning environments to ease understanding and include emotion and collaboration but how theory applies in practice must be considered carefully to benefit from BBL in the long run (McGuckin & Ladhani, 2010) so that learners could turn these skills into habits in their future academic career and make them their life-long learning strategies.

In psycholinguistics, researchers deal with how speech and languages are acquired, produced, comprehended and lost. In terms of language acquisition, we focus on developmental psycholinguistics since we are concerned with how speech emerges over time and how children construct complex structures in their mother tongue (Scovel, 2009). Since BBL combines research findings from different disciplines, it offers a complete picture as to how learning should take place in that it covers both cognitive and emotional processes into account. Thus, it is suggested that BBL should be put into teacher education curriculum (Connell, 2009) because if pre-service teachers are equipped with the necessary theoretical knowledge and practices and receive education with the help of BBL activities, they can use them in their future classes.

Whole-brain involvement in the learning process was embraced by a number of researchers since it increases student achievement by allowing variety in learning activities with regard to the individual preferences of learners (Calhoun, 2012). However, this does not necessarily guarantee the positive outcomes of employing brain-based learning activities by involving both hemispheres due to the fact that each teaching context is unique with its facilities and limitations.

2.3 Studies on BBL

There are several studies conducted on brain-based learning in different educational settings. For example, in Turkish EFL context, with the participation of 69 learners aged between

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11-12, it was found that learners' GEFT scores and L2 achievement test scores were positively correlated and that field independent learners performed better on the discrete-point and cloze tests. While field dependence-independence cognitive styles were found to have significant role in learner performance, hemisphericity did not yield significant correlations (Alptekin & Atakan, 1990).

Gender of learners could be distinctive in the relationship between learners' cognitive styles and second language acquisition because with a sample of 383 learners Tinajero and Paramo (1998) found that field-independent girls performed better than their field-dependent counterparts but they did not come up with the same finding for the boys. When we look at BBL applications in various educational contexts we see that special education classes and science classes are among the most studied cases (Pociask & Settles, 2007; Akyürek & Afacan, 2013).

The structure of the brain should be well understood so that the teacher could demonstrate the learner his/her potential to learn and enhance his/her motivation to go on learning. This is true for reading span of the learners which is considered to be a measure of L1 or L2 working memory capacity. With the participation of 43 Turkish EFL learners, Alptekin and Erçetin (2010) found that L1 and L2 processing tasks were positively correlated to L1 and L2 storage tasks and that only L2 reading span was correlated with L2 inferential comprehension at a significant level. In another study conducted with 53 Iranian students, the learners' cognitive style or their gender was not found to affect their speaking performance (Soozandehfar, 2011).

BBL could be effective not only in student achievement but also in student motivation and attitudes (Akyürek & Afacan, 2013). We could approach BBL as an interdisciplinary approach which applies all the lessons found in the curriculum so that each teacher could adapt the principles of BBL into their specific teaching contexts and contents. The field-dependence or field independence did not yield significant results because the relationship between the learners' cognitive styles and their test performance was explored with 30 Iranian female students taking a cloze test and no difference was found between their cognitive styles and systematic variance. Therefore, learners' cognitive styles were not found to be a source of test bias (Alimorad, 2013). Since Turkey is also an EFL context, similar studies might share common findings with the previous studies.

The abundance of studies related to BBL made it mandatory to reach a general conclusion. The meta-analysis of 31 studies conducted between 1999 and 2011 revealed that BBL has positive outcome on student success but this takes place at a medium level (Gözüyesil & Dikici, 2014). Learners' cognitive styles can be an indicator of their future success. Likewise, field dependence or independence could predict learners' vocabulary knowledge because mean scores of Iranian EFL learners concluded that learners' field dependent and independent cognitive styles were associated with their vocabulary knowledge (Rostampour & Niroomand, 2014). Since testing is an important part of foreign language education in terms of informing the teacher and the learner about their progress as well as their strong and weak points (Brown, 2004) brain dominance of language learners may give us clues on our test formats because different hemisphere dominance may lead to different test performance in different vocabulary tests. For example, in Iranian EFL context with 53 participants, right thinking, left-thinking and integrated thinking learners took various vocabulary tests and it was found that right-thinking learner did better than the other two groups on the picture identification test while left-thinking learner did better than the other two groups on multiple-choice synonyms, multiple-choice antonyms, and word-for-word translation. The findings prove the importance of considering learners' brain dominance to help the teacher to arrange a rich learning environment with various types of tests to enhance success among learners (Kordjazi & Ghonsooly, 2015). There are studies conducted on brain-based learning regarding teaching Turkish

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and English. Not only the role of teacher education but also the influence of the informative seminars was highly stressed in the application of BBL to teach Turkish (Bulut, 2014). As to implementation of BBL in Turkish EFL context, it was found that BBL could increase the motivation of learners to improve their writing when provided with some BBL techniques (Kuş & Bakır, 2013).

These conclusions point out that even teaching practices which are widely welcomed and practiced by a large number of teacher need to be questioned due to the context-bound of teaching circumstances. BBL might seem promising in theory but educators may encounter serious problems in application so the widely known science research-practical application gap also goes for BBL activities. However, organizational procedures like delivering teacher conferences could be an effective solution (Edelenbosch, Kupper, Krabbendam, & Broerse, 2015) to prevent misunderstanding and prejudices and act as a guide for them.

2.4 Studies on Teacher Educators

Becoming a teacher educator should not be seen as the end point of a spectrum ranging from the pre-service teacher education programmes, going on with in-service teacher education programmes and finally ending with becoming a teacher educator. Since they educate the educators of tomorrow, teacher educators need to be open to changing trends of teaching and language policies and refresh themselves in line with the needs, interests and expectations of student teachers. They should provide teacher candidates not only with theoretical knowledge but also practical solutions that will enable them to cope with the problems in their future classes (Zeichner, 2005). Teacher educators may feel dilemma. So which way to follow? To be a researcher or a practitioner? The context-bound needs and expectations of the pre-service teacher education programmes will be effective in determining the practices of teacher educators since each country sets specific aims to be actualized in its educational system and possess teachers accordingly (Cochran-Smith, 2005). Then, there must be certain tasks and competencies that teacher educators are expected to possess. 6 task areas and four types of competencies were identified for teacher educators with the help of Delphi method conducted in three rounds with open-ended interviews and two rounds of questionnaires. The task areas were: the teacher educator working on his/her own development, and that of colleagues (professionalism and well-being), providing a teacher education programme, taking part in policy development and development of teacher education, organizing activities for and with teachers, selecting teachers and carrying out research whereas competence areas were content competencies, communicative and reflective competencies, organizational competencies and pedagogical competencies (Koster, Brekelmans, Korthagen, & Wubbels, 2005).

Teacher educators could be expected to possess certain theoretical and practical knowledge but they are also expected to behave in a certain way by novice teachers. It seems that the less the discrepancy between the two groups about the expertise, that is the professional knowledge and competence, the better. It was found that there were some differences between the two groups in terms of their perceptions regarding the characteristics of good teacher educators and the professional knowledge of teacher educator. Quality of knowledge, creating new knowledge, teaching different ages, detailed understanding of the educational system and professional autonomy were the aspects that differ teacher educators' expertise from that of teachers (Smith, 2005). Teaching practices of teacher educators are of great significance because how they teach affect prospective teachers' learning and shape their preferences for their future classes. Since teacher educators are seen as role models, student teachers will be greatly influenced the teaching methods and techniques employed by teacher educators. Surprisingly a case study on teacher educators found out that professional skills and knowledge do not develop automatically in the

course of time and that experience does not necessarily mean more or better modelling (Lunenberg, Korthagen, & Swennen, 2007).

Differing needs of teacher educators may result from the fact that they have various backgrounds and working conditions. Since their work scope is intensive and they need to catch up with the latest trends and moves in education besides lecturing and conducting research, they may need support from various shareholders. Just like the pre-service teachers or in-service teachers, teacher educators also need professional guidance and help due to the possibility that they go through the process of professional development alone (Lunenberg, 2010). Do teacher educators always educate pre-service or in-service teachers? Simply no because teacher educators may need training in their long and complex profession as well. In a Ugandan case study, teacher educators' education was deeply questioned and it was suggested that education of teacher educators includes a number of factors such as defining their roles, tasks, reflective practice, pedagogical and content knowledge, research, context and capacities to name a few (O'Sullivan, 2010). Since each teaching is highly context-bound, the expectations from teacher educators differ from country to country even from within the same country to a large extent. It should be noted that if there are effective and knowledgeable teacher educators, then there will be effective and knowledgeable teachers who will educate the learners in different schools. Therefore, education of teacher educators should be paid special attention in order to promote success in teacher education services and enhance success at different types of schools accordingly.

Teacher educators who are at the beginning of their career may need to seek professional support from their colleagues and this support could be in the form of self-study groups or collaboration in that they could form community of practice among themselves in order to get professional help from more experienced colleagues and create a learning culture in their organizations. Such a learning culture for teacher educators seem promising because their work is complex including pedagogy, research and in-service training (Gallagher, Griffin, Parker, Kitchen, & Figg, 2011). Teacher educators may follow a zigzag pattern in their career in that they could move back and forth and move among different stages during their long professional journey. It was found out that 10 teacher educators followed the same four stages of trajectory, namely anticipation/curiosity, withdrawal, awareness and change, in spite of their differing backgrounds. These stages include their motives to join professional events, withdrawing from their goals or rejecting the community as a shareholder, gaining consciousness about the probability of change and finally adopting new approaches for change (Brody & Hadar, 2011).

Teacher educators may differ in terms of their view of what research is, what they would like to carry out for their academic studies and the level of support they get from their institutions and shareholders. In a study conducted with 82 teacher educators at a university in Saudi Arabia concluded that teacher educators had technical views about research and they pointed out the gap between the expected research productivity and institutional support (Borg & Alshumaimeri, 2012).

Teacher educators' perceptions regarding the term "effective teacher" play an important role in their teaching habits since how they define the term could deeply affect their teaching practices and shape their professional identity (Levy-Feldman & Nevo, 2013). While some may attach more importance to their "teaching" side other may be more inclined to enhance their "research" side, which determine the path they follow to educate pre-service teachers. Being one of the timeless educational moves, BBL could evoke considerable attention among some teacher educators in their practices. Novice teachers, experienced teachers and teacher educators may hold different views regarding academic, practical and normative demands of teaching. Because in a study conducted in Norway it was found that while all the three groups agreed on the academic

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knowledge and practical skills in teaching profession, teacher educators differed in their normative demands. For example, novice teachers found it difficult to adapt their teaching to differing demands of educational contexts while teacher educators and experienced teachers had more positive attitudes toward inclusion. Although the differences among the three groups were smaller than expected, ethical demands and dilemmas in teaching were the two points where the differences among the participants were large (Caspersen, 2013).

Teacher educators may have certain difficulties in sustaining their professional responsibility while having to cope with research, pedagogy and lecturing duties. Interviews with four Irish teacher educators pointed out the significance of professional accountability which is reactive and framed by political goals and professional responsibility which is proactive and framed by professions. This responsibility and accountability make it possible for teachers to conduct multiple performance scripts and creative coping strategies in their professional life (Solbrekke & Sugrue, 2014). The cumulative aspect of experiences and knowledge will push teacher educators to adopt their own or self-approaches in their teaching and research practices. In a narrative study with 11 teacher educators in different contexts revealed that they refer to their own beliefs and practices to shape their professional learning (Kani, 2014). As key agents of teaching-learning practices, attitudes of pre-service teachers, in-service teachers and teacher educators towards educational changes play an important role in shaping the route of these changes. In a study conducted in Czech Republic with the participation of 100 pre-service teachers, 80 in-service teachers and 88 teacher educators, it was found that in-service teachers had negative attitudes towards the changes, teacher educators had lack of concern for the changes and finally student teachers had pro-innovative attitudes toward the changes (Vrabcová, 2015).

These findings show the importance of teacher educators' influence on in-service teachers and pre-service teachers because if teacher educators are conceived regarding the use or application of newer educational moves and changes, they can make a difference in the perception of pre-service teachers while lecturing. In a similar vein, teacher educators can make changes in the attitudes of in-service teachers by persuading them about the benefits of the related changes or moves.

In light of the research findings on brain and BBL, the need to question teacher education programmes comes to fore as a crucial topic. There seems to be lack of research studies which associate BBL applications and teacher educators' professional development. Therefore, this study sheds light on an overlooked area in teacher education and aims to find out teacher educators' perceptions and practices of BBL activities by exploring the following questions:

- 1- What do the participant teacher educators know about BBL activities?
- 2- What are the participant teacher educators' beliefs regarding BBL activities?
- 3- What are the practices of the participant teacher educators about BBL activities?
- 4- What kind of brain-based teaching techniques are used in the ELT programme?
- 5- What are the factors that hinder effective application of BBL?

3. Methodology & Participants

This study was a descriptive study aiming to identify patterns or trends in a situation and in this case the knowledge, beliefs and practices of faculty members regarding BBL. The study was based on a mixed-methods approach.

First the researcher visited the teacher educators in-person to get permission to apply the questionnaire. After they agreed to participate in the study, the researcher asked whether it is

possible to conduct face-to-face semi-structured interviews given in Appendix A but they had to decline face-to-face interview due to their restricted office hours and busy schedule. Therefore, the researcher prepared three open-ended questions about the BBL applications of the teacher educators. Then the researcher got feedback from two field experts about the research design of the study as well as the content and face validity of the interview tool with regard to wording and order of the questions. After some revisions, the written interview form was ready. She visited the teacher educators again to ask whether it is possible to conduct written interview and they all agreed to participate. Therefore, the researcher sent e-mails to the teacher educators in question and they all sent the interview form back to the researcher after completing it.

The participants were 23 faculty members from Gazi University, Faculty of Education, English Language Teaching Programme, who were chosen with convenient sampling for the questionnaire and with random sampling for interviews. There was a convenient sampling due to the restrictions encountered in the application so the participants were chosen according to their accessibility and proximity to the researcher. Demographic information of participants could give us clues about their teaching beliefs and practices. All participants were faculty members at Gazi University, Faculty of Education, English Language Teaching Programme, which means they were teacher educators. There were 10 male and 13 female faculty members participating in this study. Six of them had Master's degree while 17 had Ph.D. degree. Seven of them were aged between 30-39, 10 were 40-49 and finally six were 50-59. There was no participant younger than 30 or older than 60. Two of them had teaching experience less than 5 years, 10 had 11-15 years, three had 16-20 years and finally eight had more than 20 years of teaching experience. In addition, standard deviation was the highest in teaching experience years by 1,054.

Table 1. Demographic Features of Teacher Educators (N=23)

	Male	Female		
Gender	10	13		
	Mater's	Ph.D.		
Degree	6	17		
	30-39	40-49	50-59	
Age	7	10	6	
	Less than 5 years	11-15	16-20	20 and over
Teaching Experience	2	10	3	8

Data were gathered with two instruments, the first one was the questionnaire called "Brain-Based Learning Survey Questionnaire" developed by Shelly R. Klinek from Indiana University of Pennsylvania, in Doctor of Education dissertation in 2009 in English and the second one was a written interview form to elicit more detailed responses from the participants. Two experts' opinions were gathered for the research design of the study as well as the content of the interview form. The interview was structured and had three open-ended questions about the participants' beliefs, practices and suggestions. The researcher conducted the coding, categorization and interpretation of the questionnaire items and interview questions. The researcher coded the quantitative data with the help of a statistical programme while she employed constant comparison method for the qualitative data analysis. The questionnaire and the interview form were sent to the participants via email. Quantitative data were analysed with SPSS 16 and excel programme while the qualitative data were analysed through content analysis (Glasser & Strauss, 1967) since the interpretation of the participant opinions requires iterative process like counting instances of words and phrases that are found in specific categories. Besides, it follows a nonlinear route since it makes the researcher move back and forth in line with the coming data (Dörnyei, 2007). In this

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way the researcher was able to obtain the necessary categories and sub-categories of BBL applications of the teacher educators in question because content analysis is one of the most frequent data analysis methods in the field of education and it is employed in various studies about foreign language learning (Sándorová, 2014).

3.1 Reliability of the Instrument

Validity and reliability of the instrument, that was the Brain-Based Learning Survey Questionnaire, was done by Klinek in 2009. Content validity was established by judgment from an expert panel and there were some revisions and change in wording of some of the items. Revisions included adding more information to the definition of brain-based learning and Brain Gym and to change the wording to “indicators of” brain-based learning and “indicators” of Brain Gym. The questionnaire consisted of 45 competency/brain-based learning indicators and Brain Gym indicators statements divided into four parts. The first part of the questionnaire included five items about demographics. The second part included the items about the participants’ knowledge of, beliefs toward, and practices of brain-based learning on a strongly agree to strongly disagree scale. The second part was also divided into three categories namely knowledge-14 items, beliefs-13 items, and practices-9 items. Reliability of the instrument was determined by using the split-half reliability technique and the Spearman-Brown correction formula was computed to determine the overall reliability of the instrument. Only the Practices Scale showed a less-than acceptable reliability ($\alpha = .64$) and all the other items had higher reliability levels above .70. However, as the context is different from the one used earlier, the researcher felt the need to look at the reliability statistics both in general and part by part via Cronbach Alpha. General reliability of the questionnaire was found to be .882, which is high and means it is reliable. As to the parts of the questionnaire, it was seen that knowledge questions had higher reliability (.729) than the belief questions (.545) and practice questions (.521), which could be due to the small size of the sample.

4. Results

There are 5 research questions and each research question will be addressed in detail.

4.1 What do the participant teacher educators know about BBL activities?

In light of the questionnaire findings, it has been found out that there was variation among the answers of the participants regarding their knowledge about BBL. Since the questionnaire consists of different parts, findings related to each part will be given separately. In this part you will be provided the frequencies and percentages related to participants’ knowledge about brain-based learning and brain gym together with agreement and frequency ratings.

Table 2. Frequencies and Percentages for Brain-Based Learning Knowledge Questions with Agreement Ratings (N=23)

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I have sufficient understanding of how the brain learns.	0 (0%)	4 (17.4%)	5 (21.7%)	8 (34.8%)	6 (26.1%)
I am comfortable with the use of various learning strategies as part of my teaching.	0 (0%)	2 (8.7%)	3 (13.0%)	9 (39.1%)	9 (39.1%)
I am knowledgeable about the use of providing frequent,	1 (4.3%)	1 (4.3%)	3 (13.0%)	10 (43.5%)	8 (34.8%)

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non-judgmental feedback.					
I feel the need to be more adequately trained in the area of how the brain learns best.	1 (4.3%)	2 (8.7%)	6 (26.1%)	10 (43.5%)	4 (17.4%)
I evaluate in a way that accounts for the fact that all students learn differently.	1 (4.3%)	4 (17.4%)	1 (4.3%)	11 (47.8%)	6 (26.1%)

Table 2 presents participants' knowledge about brain-based learning. For the item "I have sufficient understanding of how the brain learns"; four participants disagreed, five were neutral, eight agreed and six strongly agreed but none of them strongly disagreed. Therefore, about a quarter of the participants agreed that they had sufficient knowledge about the brain's learning and this was followed by those strongly agreeing. In the second item "I am comfortable with the use of various learning strategies as part of my teaching"; again none of the participants strongly disagreed, two disagreed, three were neutral, nine agreed and nine strongly agreed. This time participants mostly either agreed or strongly agreed that they were comfortable with using various strategies. In the third item "I am knowledgeable about the use of providing frequent, non-judgmental feedback"; one participant strongly disagreed and one disagreed while three were neutral, 10 agreed and eight strongly agreed. In this item about half of the participants agreed that they were knowledgeable about giving feedback. In the fourth item "I feel the need to be more adequately trained in the area of how the brain learns best"; one participant strongly disagreed, two disagreed, six were neutral, 10 agreed and four strongly agreed. Again, about half of the participants agreed that they needed more training about how brain learns. In the last item "I evaluate in a way that accounts for the fact that all students learn differently"; one participant strongly disagreed, four disagreed, one was neutral, 11 agreed and six strongly agreed. Again, about half of the participants agreed that they evaluated their students in different ways.

Table 3. *Frequencies and Percentages for Brain Gym Knowledge Questions with Agreement Ratings (N=23)*

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I feel the need to be more adequately trained in relaxation, movement, and crossing the midline activities and strategies for my classroom to enhance learning	2 (8.7%)	2 (8.7%)	5 (21.7%)	11 (47.8%)	3 (13.0%)

Brain gym is employed via using various simple movements to advance whole-brain learning (Dennison & Dennison, 1985). When we look at Table 3 for the brain gym item "I feel the need to be more adequately trained in relaxation, movement, and crossing the midline activities and strategies for my classroom to enhance learning"; two participants strongly disagreed and disagreed, five were neutral, 11 agreed and three strongly agreed. Therefore nearly half of the participants felt the need to be properly trained in utilizing certain brain-based learning activities.

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Table 4. *Frequencies and Percentages for Brain-Based Learning Knowledge Questions with Ratings for How Often (N = 23)*

	Never	Rarely	Occasionally	Often	Always
I pre-expose my students to content and context of a topic at least one week before introducing it.	0 (0%)	4 (17,4%)	6 (26,1%)	11 (47,8%)	2 (8,7%)
I have attended worthwhile workshops or conferences which dealt with the topic of a certain type of learning strategy.	1 (4.3%)	2 (8.7%)	14 (60.9%)	5 (21.7%)	1 (4.3%)
I have sought the advice of colleagues concerning the implementation of a certain type of learning strategy.	0 (0%)	3 (13.0%)	11 (47.8%)	9 (39.1%)	0 (0%)
I support real-life, immersion-style, multi-path learning over traditional learning.	0 (0%)	1 (4.3%)	5 (21.7%)	11 (47.8%)	6 (26.1%)
Our university has encouraged workshops, conferences, or in-service training on the topic of the newest strategies in classroom teaching.	3 (13.0%)	6 (26.1%)	8 (34.8%)	6 (26.1%)	0 (0%)

When we look at participants' ratings regarding their knowledge about brain-based learning in Table 4, there is again variation among their answers. In the first item "I pre-expose my students to content and context of a topic at least one week before introducing it"; none of the participants indicated never, four indicated rarely, six occasionally, 11 often and two always, which means about half of the participants agreed they often pre-exposed their students to content and context of a topic in advance. In the second item "I have attended worthwhile workshops or conferences which dealt with the topic of a certain type of learning strategy"; one participant indicated never, two indicated rarely, 14 occasionally, five often and one always. More than half of the participants indicated they occasionally attended important workshops or conferences about a specific learning strategy. In the third item "I have sought the advice of colleagues concerning the implementation of a certain type of learning strategy"; none of the participants indicated never or always but three of them indicated rarely, 11 occasionally and nine often. As is seen, about half of the participants indicated they got colleague feedback about how to apply a specific learning strategy. In the fourth item "I support real-life, immersion-style, multi-path learning over traditional learning"; none of the participants indicated never, one rarely, five occasionally, 11 often and six always. Nearly half of the participants indicated that they often preferred real-life and multi-path learning rather than traditional learning. In the fifth item "Our university has encouraged workshops, conferences, or in-service training on the topic of the newest strategies in classroom teaching"; three participants indicated never, six rarely, eight occasionally and six often but none indicated always. Therefore, about one third of the participants indicated that their university sometimes encouraged in-service training about the newest strategies.

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Table 5. *Frequencies and Percentages for Brain Gym Knowledge Questions with Ratings for How Often (N=23)*

	Never	Rarely	Occasionally	Often	Always
I use or encourage some form of movement in my classroom to help with focus, attention, or learning readiness.	1 (4.3%)	7 (30.4%)	8 (34.8%)	5 (21.7%)	2 (8.7%)
I have attended worthwhile workshops or conferences which dealt with the topic of relaxation, movement, and crossing the midline activities and strategies for my classroom to enhance learning.	4 (17.4%)	9 (39.1%)	7 (30.4%)	3 (13.0%)	0 (0%)

Table 5 presents that in the first item “I use or encourage some form of movement in my classroom to help with focus, attention, or learning readiness”; one participant indicated never, seven rarely, eight occasionally, five often and two always. It is seen that high majority of the participants (N=15 - 65.2%) rarely or occasionally used movement to help focus or learning. In the second item “I have attended worthwhile workshops or conferences which dealt with the topic of relaxation, movement, and crossing the midline activities and strategies for my classroom to enhance learning”; four participants indicated never, nine rarely, seven occasionally and three often but none indicated always. More than a third of the participants indicated that they rarely attended important workshops about various strategies to enhance learning. This was followed by nearly a third of the participants (N=7 – 30.4%) indicating occasionally. The findings showed that faculty members did not employ movement strategy in their classes and rarely attended workshops on specific learning strategies to enhance learning. Thus these findings call for more workshops or in-service training for faculty members to get adequate knowledge about how brain learns and how to apply brain-based learning strategies in their classes.

Table 6. *Descriptives of Brain Based Learning Knowledge Questions*

	N	Range	Minimum	Maximum	Mean	Std. Deviation
sufficient	23	3	2	5	3,70	1,063
comfortable	23	3	2	5	4,09	,949
knowledgeable	23	4	1	5	4,00	1,044
trained	23	4	1	5	3,61	1,033
evaluate	23	4	1	5	3,74	1,176
prexpose	23	3	2	5	3,48	,898
workshop	23	4	1	5	3,13	,815
colleague	23	2	2	4	3,26	,689
multipath	23	3	2	5	3,96	,825
inservice	23	3	1	4	2,74	1,010
crosslateral	23	2	3	5	3,96	,475
playrole	23	2	3	5	3,83	,650
Water	23	3	2	5	3,74	,915
attention	23	3	2	5	3,65	,714
Valid N (listwise)	23					

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The descriptives of brain-based learning knowledge questions are shown in Table 6 and it includes the range, minimum values, maximum values, mean scores and standard deviation of the variables. The findings revealed that the highest deviation between the participants' answers were observed in five items, namely "I have sufficient understanding of how the brain learns", "I am knowledgeable about the use of providing frequent, non-judgmental feedback", "I feel the need to be more adequately trained in the area of how the brain learns best", "I evaluate in a way that accounts for the fact that all students learn differently" and "Our university has encouraged workshops, conferences, or in-service training on the topic of the newest strategies in classroom teaching".

4.2 What are the participant teacher educators' beliefs regarding BBL activities?

Participants' beliefs regarding BBL activities will be given in the following tables and questionnaire items will be interpreted one by one with the help of different tables.

Table 7. Frequencies and Percentages for Brain-Based Learning Belief Questions with Agreement Ratings ($N=23$)

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Different learning approaches are a waste of time in a university setting.	15 (65.2%)	6 (26.1%)	2 (8.7%)	0 (0%)	0 (0%)
The purpose of my classroom is to create a supportive, challenging, and a complex environment where questions are encouraged.	0 (0%)	0 (0%)	1 (4.3%)	9 (39.1%)	3 (56.5%)
I view how students will learn best, more important than, what I should teach.	0 (0%)	1 (4.3%)	6 (26.1%)	10 (43.5%)	6 (26.1%)
I feel that how one learns plays an important role in classroom learning.	0 (0%)	0 (0%)	1 (4.3%)	11 (47.8%)	11 (47.8%)
I would be more willing to initiate various learning strategies if there were more time to do so.	0 (0%)	0 (0%)	2 (8.7%)	10 (43.5%)	11 (47.8%)
Brain-based learning is a fad in education which will pass as many other so-called "reforms" have done.	3 (13.0%)	2 (8.7%)	11 (47.8%)	5 (21.7%)	2 (8.7%)
I believe I already do brain-based learning in my classroom.	0 (0%)	0 (0%)	11 (47.8%)	10 (43.5%)	2 (8.7%)
I would be more willing to initiate brain-based learning if I knew more about it.	2 (8.7%)	1 (4.3%)	3 (13.0%)	12 (52.2%)	5 (21.7%)
Brain-based learning is a very positive way to learn.	0 (0%)	0 (0%)	4 (17.4%)	10 (43.5%)	9 (39.1%)
I feel all college of education faculty should know how to implement brain-based learning.	0 (0%)	0 (0%)	3 (13.0%)	11 (47.8%)	9 (39.1%)

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In Table 7, for the first item “Different learning approaches are a waste of time in a university setting”; 15 participants strongly disagreed, six disagreed and two were neutral but there were no participants who agreed or strongly agreed with the statement. In the second item “The purpose of my classroom is to create complex environment where questions are encouraged”; none of the participants strongly disagreed or disagreed but one was neutral, nine agreed and three strongly agreed. More than a third of the participants (N=9 - 39.1%) agreed that the purpose of their classroom was to create a supportive, challenging, and a complex environment where questions were encouraged. In the third item “I view how students will learn best, more important than, what I should teach”; none of the participants strongly disagreed or one disagreed but six were neutral, 10 agreed and six strongly agreed. So nearly a third of the participants agreed that the purpose of the classes was to provide a supportive and challenging environment. In the fourth item “I feel that how one learns plays an important role in classroom learning”; none of the participants strongly disagreed or disagreed but one was neutral and 11 agreed or strongly agreed. About half of the participants (N=11 - 47.8%) agreed or strongly agreed that how one learns played an important role in classroom learning. In the fifth item “I would be more willing to initiate various learning strategies if there were more time to do so”; none of the participants strongly disagreed or disagreed but two were neutral, 10 agreed and 11 strongly agreed. Most of the participants (N=21 – 91.3%) agreed that they would be more willing to initiate various learning strategies if they had more time. In the sixth item “Brain-based learning is a fad in education which will pass as many other so-called “reforms” have done”; three strongly disagreed, two disagreed while 11 were neutral, five agreed and two strongly agreed. Though there was great variation among the participant answers about half of them (N=11 – 47.8%) were neutral about the item. In the seventh item “I believe I already do brain-based learning in my classroom”; none of the participants strongly disagreed or disagreed with the item but 11 were neutral, 10 agreed and two strongly agreed. About half of the participants (N=11 – 47.8%) were neutral while more than a third of them (N=10 – 43.5%) agreed that they had already employed BBL activities in their classes.

In the eighth item “I would be more willing to initiate brain-based learning if I knew more about it”; two participants strongly disagreed, one disagreed while three were neutral, 12 agreed and five strongly agreed. More than half of the participants (N=12 – 52.2%) agreed that they would be more willing to initiate brain-based learning if they knew more about it. In the ninth item “Brain-based learning is a very positive way to learn”; none of the participants strongly disagreed or disagreed but four were neutral, 10 agreed and nine strongly agreed. High majority of the participants (N= 19 – 82.6%) supported the idea that BBL is a very positive way to learn. In the tenth item “I feel all college of education faculty should know how to implement brain-based learning”; none of the participants strongly disagreed or disagreed but three were neutral, 11 agreed and nine strongly agreed. Though there were participants neutral about the statement, a high majority of them (N= 20 – 87%) agreed that all faculty members of education faculty should know about how to apply BBL in their classes.

Table 8. *Frequencies and Percentages for Brain Gym Belief Questions with Agreement Ratings (N = 23)*

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I feel that movement, relaxation, and cross lateral stretching should play an important role in classroom learning.	0 (0%)	0 (0%)	7 (30.4%)	13 (56.5%)	3 (13.0%)
I feel that drinking water is a very important aspect that enhances learning.	0 (0%)	2 (8.7%)	7 (30.4%)	9 (39.1%)	5 (21.7%)
I view movement, relaxation, and cross lateral stretching a valid form of readiness for learning.	0 (0%)	0 (0%)	3 (13.0%)	18 (78.3%)	2 (8.7%)

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Table 8 presents that in the first item “I feel that movement, relaxation, and cross lateral stretching should play an important role in classroom learning”, none of the participants strongly disagreed or disagreed but seven were neutral, 13 agreed and three strongly agreed. More than half of the participants (N=13 – 56.5%) agreed that movement, relaxation, and cross lateral stretching should play an important role in classroom learning. In the second item “I feel that drinking water is a very important aspect that enhances learning”; none of the participants strongly disagreed, two disagreed, seven were neutral, nine agreed and five strongly agreed. More than half of the participants (N=14 – 60.8%) had positive beliefs about drinking water. In the third item “I view movement, relaxation, and cross lateral stretching a valid form of readiness for learning”; none of the participants strongly disagreed or disagreed but three were neutral, 18 agreed and two strongly agreed. High majority of the participants (N= 18 – 78.3%) saw movement, relaxation, and cross lateral stretching a valid form of readiness for learning.

Table 9. Descriptives of Brain-Based Learning Belief Questions

	N	Range	Minimum	Maximum	Mean	Std. Deviation
waste	23	2	1	3	1,43	,662
complex	23	2	3	5	4,52	,593
viewbest	23	3	2	5	3,91	,848
howlearn	23	2	3	5	4,43	,590
initiate	23	2	3	5	4,39	,656
fad	23	4	1	5	3,04	1,107
already	23	2	3	5	3,61	,656
willing	23	4	1	5	3,74	1,137
positive	23	2	3	5	4,22	,736
implement	23	2	3	5	4,26	,689
adequately	23	4	1	5	3,48	1,123
crossing	23	4	1	5	3,00	,905
concentration	23	3	2	5	3,09	,848
Valid N (listwise)	23					

When the descriptives of brain-based learning belief questions were checked in Table 9, it was seen that the highest deviation among the answers was found in three items, namely ““Brain-based learning is a fad in education which will pass as many other so-called “reforms” have done”, “I would be more willing to initiate various learning strategies if there were more time to do so” and “I feel the need to be more adequately trained in the area of how the brain learns best”.

4.3 What are the practices of the participant teacher educators about BBL activities?

BBL practices of teacher educators will be addressed in detail in the following tables together with frequency and percentage details of each item.

Table 10. *Frequencies and Percentages for Practice Questions with Agreement Ratings (N = 23)*

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
It is not important to practice various learning strategies in my classroom.	0 (0%)	0 (0%)	15 (65.2%)	7 (30.4%)	1 (4.3%)
I should teach all my students the meaning and purpose of various styles of learning.	1 (4.3%)	2 (8.7%)	13 (56.5%)	7 (30.4%)	0 (0%)
I have been successful; therefore I will not change my teaching strategy.	3 (13.0%)	14 (60.9%)	6 (26.1%)	0 (0%)	0 (0%)

Table 10 summarizes the frequencies and percentages for practice questions with agreement ratings. It is seen that in the first item “It is not important to practice various learning strategies in my classroom”, none of the participants strongly disagreed or disagreed, 15 were neutral, seven agreed and one strongly agreed. In the second item “I should teach all my students the meaning and purpose of various styles of learning”; one participant strongly disagreed, two disagreed, 13 were neutral, seven agreed and none strongly agreed. More than half of the participants (N=13 – 56.5) were neutral about teaching student teachers students the meaning and purpose of various styles of learning. In the third item “I have been successful; therefore I will not change my teaching strategy”; three participants strongly disagreed, 14 disagreed, six were neutral while none of the participants agreed or strongly agreed. This means that most of the participants (N= 14 – 60.9%), believed that their teaching style should not be static.

In the first two items the results were inconsistent with the previous findings but the last item results were in harmony with the knowledge and belief results indicated earlier.

Table 11. *Frequencies and Percentages for Practice Questions with Ratings for How Often (N = 23)*

	Never	Rarely	Occasionally	Often	Always
It is important to demonstrate and show educators new ways of teaching.	0 (0%)	0 (0%)	0 (0%)	9 (39.1%)	14 (60.9%)
I am willing to change my teaching style.	2 (8.7%)	1 (4.3%)	3 (13.0%)	12 (52.2%)	5 (21.7%)
I utilize some form of brain-based learning strategy on a weekly basis.	0 (0%)	2 (8.7%)	10 (43.5%)	9 (39.1%)	2 (8.7%)
I use new and updated information in all my education classes.	0 (0%)	0 (0%)	5 (21.7%)	12 (52.2%)	6 (26.1%)
I use the newest technology in my classroom.	0 (0%)	4 (17.4%)	11 (47.8%)	4 (17.4%)	4 (17.4%)
I currently attend educational conferences and workshops about the latest trends in education.	0 (0%)	5 (21.7%)	6 (26.1%)	8 (34.8%)	4 (17.4%)

In Table 11 which shows the frequencies and percentages for practice questions with ratings for how often, it is seen that in the first item “It is important to demonstrate and show

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educators new ways of teaching”; none of the participants indicated never, rarely or occasionally but nine indicated often and 14 indicated always. All the participants (N=23 – 100%) felt that teacher educators should be demonstrated new ways of teaching. In the second item “I am willing to change my teaching style”; two indicated never, one rarely, three occasionally, 12 often and five always. The participants were mostly (N= 17 – 73.9%) in favour of changing their teaching style. In the third item “I utilize some form of brain-based learning strategy on a weekly basis”; none indicated never, two indicated rarely, 10 occasionally, nine often and two always. About half of the participants (N= 10 – 43.5%) sometimes used BBL strategy weekly. In the fourth item “I use new and updated information in all my education classes”; none of the participants stated never or rarely but five stated occasionally, 12 often and six always. In other words, a high majority of the participants (N= 18 – 78.3%) stated that they benefit from updated information in their classes. In the fifth item “I use the newest technology in my classroom”; none of the participants indicated never, four participants indicated rarely, often and always and finally 11 occasionally. Nearly half of the participants (N=11 – 47.8%) indicated that they occasionally used the newest technology in their classrooms. In the sixth item “I currently attend educational conferences and workshops about the latest trends in education”; none of the participants chose never, five chose rarely, six occasionally, eight often and four always. There was variation among participant answers regarding attending meetings about latest news in education but it can be said that their attendance level was neither high nor low but somewhere in the middle. However, there seemed to be more need for teacher educators to attend conferences or workshops about the latest educational trends because they can educate student teachers more effectively if they are informed about what is happening currently.

Table 12. *Descriptives of Practice Questions*

	N	Range	Minimum	Maximum	Mean	Std. Deviation
practice	23	2	1	3	1,39	,583
meaning	23	4	1	5	4,09	,900
change	23	2	1	3	2,13	,626
willchange	23	3	2	5	3,30	,822
utilize	23	3	2	5	3,48	,790
updated	23	2	3	5	4,04	,706
showedu	23	1	4	5	4,61	,499
newesttech	23	3	2	5	3,35	,982
currently	23	3	2	5	3,48	1,039
Valid N (listwise)	23					

The descriptives of practice questions in Table 12 reflect the range, minimum values, maximum values, mean scores and standard deviation of the variables. There was only one item which had high standard deviation, namely “I currently attend educational conferences and workshops about the latest trends in education” item.

4.4 What kind of brain-based teaching techniques are used in the ELT programme?

In the interview, teacher educators in the ELT Programme at Gazi University were asked to explain how they implement BBL in their classes. First the emergent themes will be given and then sample quotes will be given to exemplify the related item. Below is the list of BBL activities used by the participants in their classes. The list was obtained from the content analysis of the written responses of the participants to the second item in the written interview form given at the end of the article.

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Considering learner emotions, considering needs and interests, considering learner suggestions, providing alternatives, using humour, providing freedom, facilitating group and pair works, providing more classroom space for practices, using visuals, probes, realia, giving reflections, organizing social visits, using up-to-date materials, paying attention on physical needs of learners, revision of previous week, holding reflection sessions, giving and getting feedback, allowing creativity, using visualization for relaxation, using background music, creating a multi-sensory environment, reducing anxiety, offering challenges related to learning, appealing to different learning styles & strategies, meeting learner needs, offering “break state” activities, offering the think-pair-share strategy, brain gym as lead-in activity, bridging previous and new knowledge, eliciting learner ideas, using NLP (Neuro-Linguistic Programming) activities like VAKOG (Visual, Auditory, Kinaesthetic, Olfactory and Gustatory), providing flexibility, utilizing project works and individual study, using multimodality, opportunities for self-expression, offering stress-free environment and creating interest.

As is seen, teacher educators employ various strategies in order to appeal to the psychological and cognitive states of student teachers. Some teacher educators were seen to be well-equipped about BBL while some others did not feel competent or knowledgeable enough to do so. Below are the extracts taken from the interviews and each participant was given a code like 1, 2 or 3 to ensure anonymity and get more detailed and various interpretations from the participants.

Participant 1: *“I often take the learners’ interests and emotions into consideration. For example, I allow my students to choose topics of their interests and to answer the questions from among the alternatives given.”*

Participant 2: *“I try to use humour in the class. I also let them feel free to eat and drink, etc. Physical needs are important in learning. When they get bored I do alternative activities to raise their motivation.”*

Participant 3: *“Mostly emotions, I try to do my best to cater for their emotional needs. Furthermore, I shape the way I teach in accordance with their needs and interests. When my students have certain suggestions as to the topics, I let them have a say over the issues.”*

In the first three extracts above, it is seen that individualization of the learning activities serve as a way of conducting BBL-based learning since learner needs are regarded to be important and they are encouraged to show their knowledge and abilities with the help of various assignments. Aside from their psychological needs, some physical needs such as drinking or eating during the class and having humour in classroom discussions are also included. Teacher educators also let student teacher to voice their own ideas regarding the implementation of the course and thus teacher candidates are motivated to share their opinions freely and make learning their own.

Participant 4: *“In my courses, we redesign the classroom to facilitate group and pair works, provide more classroom space for practices and to do these, we turn the classroom into a U-shape one to make sure everyone sits on the front row in full interaction with the teacher and the peers. STs are also asked to use visuals, probes, realia and similar materials to strengthen their teaching performance and thus learning in my course. To form groups, STs are asked to exploit certain pedagogical moves to have the peers work together, like colour cards. Therefore they are covertly and implicitly led to perform learner grouping and pairing through classification. They are also asked to give reflections to the teacher and each other to promote metacognitive thinking and establish plausible thinking dispositions as prospective teachers.”*

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Physical conditions of the classroom affect implementation of learning procedures because it could be difficult for teachers to deliver effective courses with students continually looking at each other's napes. Preparing visuals and offering comments about the course are highly encouraged to promote reflective learning and teaching among student teachers.

Participant 5: *“Not much in the way it is implied, but in my own way, I am trying to make them relaxed and responsive. I am not certain about what exactly brain-based learning encompasses. I am not sure if I have to exclude other ways of teaching and learning from BBL. I am not sure if anything happens outside the brain, and if there are cases in which the human brain is not involved. Although rarely, I let them organize theatre visits, or have them watch a movie together with me and discuss. In my translation courses, I sometimes want them to follow recent journals or magazines and do translation accordingly. In my poetry classes I have them listen to the original voices of the poets who wrote the poem, or recitations by native speakers. I seldom use visual materials such as Power Point presentations which involve pictures and paintings related to poems I teach. Once I organized a poetry lesson in the yard of the school, when it was spring time, and it became an unforgettable memory for my students and for me.”*

This teacher educator was not sure about what exactly BBL is and tried to establish his/her own way of having students get ready for the lesson with the help of certain techniques like following journals, listening to poets or changing the place of instruction.

Participant 6: *“Paying attention to whether or not they drink water and have eaten something and that they are not hungry. Including laughter & humour in my classes/lessons. Including and allowing the expression of emotions--could be after activities, feedback or any discussion. Starting with a review of previous work every class/lesson. Having a wrap-up or reflection session at the end of every class/lesson. Allowing them to express their creativity. Sometimes using visualization for relaxation or before an activity or a fun activity in order to relax them... knowing that mind and body are interconnected. I used background music during the exam a couple of times but that did not seem to work so I gave up on the idea. When I first started to teach at university, I tried to enrich the classroom environment. I wanted to create a multi-sensory environment particularly by using posters, student work, pictures, sayings, photos but these materials unfortunately did not stay on the walls. They were taken down by students immediately. Again I had to give up on the idea. Trying to create an environment of low or no threat by reducing negative experiences and giving positive feedback, i.e. trying to create a positive-feeling learning environment. Offering challenges related to learning—in particular challenging the traditional beliefs about teaching English as a foreign language. Preparing the learners for a task visually, aurally and kinaesthetically. Trying to meet the needs of learners with multiple intelligences by means of activities such as mind mapping (actually for the past 10 years I do the whole classwork – input--as a big mind map on the board), giving input along with problem solving tasks related to this input, offering “break state” activities when I feel that the group energy is lagging. Offering the Think-Pair-Share strategy in order to use wait-time. Brain gym before starting (sometimes). Helping students to make connections between what they already know and the new learning (at MA level I may ask my students to create a story to describe what they already know about a given topic). Eliciting students’ ideas on methodology or any topic in fact by asking them to use metaphor, which is an NLP strategy. For example what do you think teaching is similar to and why? My answer would be “cooking” because you can use different ingredients to cook many different dishes according to taste. Finally I can make use of other NLP activities or strategies such as VAKOG activities and the use of sub modalities.”*

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Paying attention to students' physical and emotional readiness is important for learning, which we can encounter in hierarchy of needs by Maslow (1943). Building on previous learning items for bridging old and new information is also stressed for meaningful learning. The teacher can focus on creating a non-threatening learning environment with the help of multisensory input as well as encouraging reflective learning, employing various strategies to stimulate interest and meet diverse needs and expectations of students.

Participant 7: *"I believe in the value of a rich and stimulating environment but I can do very little about it. I do not have a group of students that I work for long hours together in the same classroom environment. On the other hand, I employ flexibility as a principle. There are possibilities for group learning, projects and individual learning. Using multimodality whenever possible is also employed. My classes are often stress-free, where sts express themselves. I believe in reducing anxiety and creating interest instead."*

Students are believed to learn better in a flexible environment where they feel safe and free to convey opinions or make mistakes. Multimodality and different techniques such as group learning, projects and individual learning could be used to activate both hemispheres in the learning process.

4.5 What are the factors that hinder effective application of BBL?

In the written, structured interview items, teacher educators in the ELT Programme were asked about their BBL applications and certain shortcomings. Teacher educators mentioned some problems that they encounter in their classes. They also presented some suggestions for a better brain-based teaching practice. The problems reflected were about seating, resistance against professional change, lack of their knowledge about BBL, workload, overloaded syllabus and physical environment constraints. They suggested applying the knowledge in real life, assessing goals, pre-determining learning styles and intelligences and informing teacher educators about brain-based teaching and learning to deal with these problems and enhance BBL applications among teacher candidates.

Below are some of the other extracts taken from the interviews:

Participant 1: *"The teacher and the students should look for ways of relating what they learn with their lives and objectives. The teacher should encourage his/her students to accomplish something non-linguistic through linguistic means."*

Participant 2: *"One problem is the seating. Because we don't have the opportunity to do so. The seats should be relaxing and flexible for the activities done in the class. In our conditions it's hard to prepare the classroom environment for BBL. Teachers generally have their own teaching styles and don't change it according to the students. Actually, we don't get information about our students before the learning process. Their learning styles, dominant intelligence types, etc."*

Participant 4: *"Yes. In teacher education, BBL or any other similar 'fashionable' constructs are applied or utilized under different theories, principles and terms."*

Participant 5: *"Brain based teaching seems to be more applicable in the teaching of a foreign language; I am not sure how I can benefit from it in my literature classes where I always have to catch up with a very condensed syllabus. But I do not think that brain-based learning is limited to any field. It is just that I have no specific information about how I can employ it."*

Participant 6: “*I wish teachers could be informed about how the brain learns and that they could transfer some of this info by using brain-based teaching and learning strategies in their classes.*”

Teacher educators’ opinions reflect some of their concerns regarding BBL application. Teacher educators’ lack of knowledge about BBL could hinder effective implementations and some teachers or teacher educators may feel the need to be more informed about BBL procedures so that it could be beneficial in real classes. If student teachers cannot associate what they learn at their classes with their everyday life then the course could be ineffective. However, there are some other problems related to the physical appearance of the classrooms and lack of knowledge of student teachers’ learning preferences. If BBL is aimed to be actualized in real terms, then the classroom setting should give the teacher educators the flexibility to employ various teaching techniques which are formed in line with the learning needs and interests of student teachers.

5. Discussion & Conclusion

This study aimed to find out the brain-based practices of teacher educators at an ELT programme at a state university in Turkey. The study results bear similarities and differences with the previous studies conducted on brain-based learning and teacher educators. First major findings of the study will be given and they will be discussed in light of the previous studies.

The results of the study revealed that although about half of the participants had average knowledge about how brain learns, they still felt the need to be trained about how brain learns best so that they could make adjustments in their teaching styles. This finding is in parallel with the previous studies in that it indicates that there could be more opportunities for faculty members to participate in conferences or workshops in the institutions where they work because teacher educators also go through professional development in their career (Lunenberg, 2010) and they may seek for academic or peer support to cope with their tasks (Zeichner, 2005; Cochran-Smith, 2005).

Peer or colleague feedback seems to be of great importance for teacher educators. About half of the participants indicated they got colleague feedback about how to apply a specific learning strategy, which stresses the importance of cooperation and community of practice. Maybe faculty members could be encouraged to get more peer feedback to enhance their teaching methods and styles, which could be feasible with the help of community of practice (Gallagher, Griffin, Parker, Kitchen, & Figg, 2011). Besides, participants seemed to have positive beliefs about the importance of different learning styles. This finding is crucial because if they believe that they can guide student teachers appropriately, prospective teachers can see good models of teaching styles and methods and turn these into professional skills in their future career (Lunenberg, Korthagen, & Swennen, 2007). As is seen, the teacher educator and student teacher are the links found in the success chain in teacher education because both determine the route of success in their specific contexts.

Another aspect which comes to the fore is the change in educational moves shaped in line with the changing lifestyle. Teacher education programmes could be modified according to the changing demands of the age and education system (Lunenberg, 2010) since half of the participant teacher educators (N=11 – 47.8%) were neutral about the item “Brain-based learning is a fad in education which will pass as many other so-called “reforms”. Most of the participants did not have positive beliefs about the permanent state of brain-based learning activities and thought that it was temporary like other teaching methods. They may think so due to the fact that they do not have deep understanding of how brain learns and that they themselves were not educated with brain-based learning strategies in their pre-service or in-service education. Therefore, they may not have

any habit of applying different teaching methods. It should be noted that regardless of the new teaching methods and approaches, some teacher educators may rely on their own beliefs while conducting their lessons and might feel dilemma regarding the implementation of new practices (Kani, 2014). As they do not think that BBL activities can be long-lasting, they may not enhance the use of various BBL activities in their classes and student teachers may not turn these into habit, that is, use in their future classes. Here we can see the effects of learning culture in that some teacher educators may not have been educated with BBL activities during their pre-service or in-service training. They may not transfer the related skills and strategies to student teachers who are likely not to pass these to their students in the future. If there is such a classroom climate including various learning strategies and teaching methods, student teachers can have more opportunities to see how these strategies and methods work in real classroom settings, predict probable shortcomings and take precautions in advance (Zeichner, 2005). In a similar vein, Levy-Feldman & Nevo (2013) found out that teacher educators' perceptions deeply affect their teaching practices and shape their professional identity.

Lack of knowledge could be another reason that hinders the teacher from applying BBL because more than half of the participants (N=12 – 52.2%) agreed that they would be more willing to initiate brain-based learning if they knew more about it. It can be said that the teacher educators need training to implement various activities in their classes and in this vein it is brain-based learning. Being a teacher educator should not be seen as the end of point of teaching career since teacher educators may seek for professional help in their career. Although the participants did not reveal any information about in what forms the assistance or training could come during the interview, the training could be in the form of self-study groups and collaboration (Gallagher, Griffin, Parker, Kitchen, & Figg, 2011). When it comes to BBL techniques, the participants were in favour of using movement, relaxation, and cross lateral stretching in their classrooms and more than half of the participants (N=14 – 60.8%) hold positive beliefs about drinking water. The latter finding is not in parallel with that of Kaufeldt (1999) since not all the participants valued the importance of the physical needs of the students. As the brain has certain physical and psychological needs, we should satisfy those needs as educators (Kaufeldt, 1999) because in order to have learners that are ready to learn, educators should meet their needs and expectations.

Most of the participants (N= 14 – 60.9%), think that their teaching style should not be static but rather dynamic. They can be said to be open to change since the participants are mostly (N= 17 – 73.9%) in favour of changing their teaching style. In this way teacher educators can catch up with the latest educational moves and trends in teaching, refresh their teaching style and contribute to student teachers' professional skills (Vrabcová, 2015). As a guide, the teacher educators are in favour of the fact that their teaching styles and methods could undergo certain changes in time. If teacher educators are obsessed with the same teaching methods and reject changing, they are likely to repeat themselves all the time and educate student teachers who do not question but just get the given information passively. In order to prevent this, teacher educators should be encouraged to question and improve their teaching styles and methods by adding new dimensions to their teaching techniques.

As to the frequency of BBL applications, about half of the participants (N= 10 – 43.5%) sometimes use BBL strategy weekly and nearly half of the participants (N=11 – 47.8%) indicated that they occasionally use the newest technology in their classrooms. Again the latter finding is in contrast with that of Griffiee (2007) and Abbitt (2007) who stress the benefits of employing technology or online environments to enhance success in learning. The frequency of using BBL learning strategies could be increased with the help of training of teacher educators, providing a comfortable and relaxed classroom setting and making changes in the curriculum of teacher education programmes. As a member or shareholder of an educational system, teacher educators

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should keep up with the changing information to deliver the power of the new information. Lower level of technology employment might result from the fact that some teacher educators may not possess the necessary technological knowledge or professional skills to employ technological tools in their classes. They may have hesitations or problems due to lack of technological knowledge or the gap between what is expected from them and the level of support they get from their institutions as is indicated by Borg & Alshumaimeri (2012).

New applications or innovations in education may not necessarily mean success in all domains or in all contexts. In a similar vein, brain-based learning itself may not guarantee accomplishment in the long term due to the interplay between the brain and the environment. If the necessary physical and psychological conditions could be created without obstacles resulting from the lack of sources in the educational setting or lack of teacher competencies, then teachers could educate the brain and lead their learners to build on their current status of brain power and increase their potential (Köse, 2004). Once the learners have made out how to set their brain to learn, retrieve or remember, they can turn these strategies into learning habits and contribute to their own life-long learning. In addition, if educators consider learner emotions they can remove certain psychological barriers between the students and themselves and thus build rapport easily with them. They can also increase student motivation by providing alternatives in the assignments and variety in the tasks (Calhoun, 2012). Similarly, teacher educators could show student teachers how to apply what they learn in their training so that what is learnt at university could become applicable in real classrooms, which will make learning meaningful.

We should keep in mind that success in education depends on the collaboration among the different shareholders, each of whom plays an important role in shaping the structure of education. If we think about education as a whole or a chain; teacher educators, teachers and student teachers are all involved in all phases of education. In other words, if teacher educators do not know how to employ brain-based learning activities in their courses included in teacher education programmes, they will not be able to provide optimum learning conditions for student teachers. If student teachers receive education without being informed about the principles of BBL and its application, then it means they will graduate with a lack of theoretical and practical knowledge regarding BBL. In turn, when they become in-service teachers they may not refer to BBL in their classes. As is seen, pre-service teacher education could create domino effect on application and educational success respectively. That is why we should think of teacher education and learner success inseparable and attach importance the practices of teacher educators.

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APPENDIX A

BRAIN-BASED LEARNING PRACTICES OF TEACHER EDUCATORS IN AN ENGLISH LANGUAGE TEACHING PROGRAMME

Written Interview Form (WIF)

Dear participants,

This written interview form (WIF) aims to find out the brain-based learning (BBL) practices of teacher educators in English Language Teaching (ELT) Programmes. There are three open ended questions related to your teaching practices in relation to brain-based learning. Please exemplify your BBL practices as much as possible if you have any and write the reason(s) if you don't.

Your answers and your identity will be kept confidential. Your participation in the study involves no risks or requirements in any case. It is purely on voluntary basis.

Thanks for your valuable contribution. Please do not hesitate to contact me in case of any questions or concerns.

I read the information above and am willing to take part in the study.

Name Surname:

Date:

Signature:

I would like to take part in the interview: Yes

No

Kind Regards

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Brain-Based Learning Practices of Teacher Educators in an English Language Teaching Programme**Written Interview Form (WIF)**

1- Do you think you create a physical brain-based learning (BBL) environment for your students in your classes?

2- If yes, how do you apply teaching strategies that promote a brain-based learning environment for your students in your classes? Please give examples.

3- Do you have any suggestions regarding the application of brain-based learning in pre-service teacher education?

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