



An intervention in brain-based learning: Leading to shifts in language learning beliefs

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Abstract

This case study examines whether or not an intervention in brain-based learning (BBL) brings about any change in language learning beliefs (LLBs) of adult EFL learners. Students enrolled in an English preparatory program were taught in accord with BBL principles over 16 weeks. Beliefs about language learning inventory (BALLI) was administered at the outset of and subsequent to the intervention in an attempt to explore if English lessons designed in compliance with BBL principles led to changes in EFL learners' LLBs. The findings obtained by running Wilcoxon signed-rank test demonstrated that learning English by attending to lessons planned according to BBL principles induced a statistically significant change in 13 of a total of 34 beliefs in the inventory.

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1. Introduction

Learning English in EFL settings is extensively considered to be disadvantageous over learning English in ESL settings due to not using English as the medium of communication to go through daily life routines. Given the fact that English is not needed to survive in daily life, EFL learners' speaking competence is contemplated to be less developed as against that of ESL Learners, having prompted practitioners and researchers to make attempts to probe ways and techniques having the potential for striving for overcoming shortfalls in EFL learning. At this point, BBL approach which is defined by Connell (2009) as improving instructional practices to promote student learning by employing ways students can feel comfortable can be implemented to support EFL learners in acquiring and increasing their proficiency in English. Stimulating

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creativity through challenging students and setting up opportunities so as to nurture knowledge attainment and retention is prioritized in the studies on BBL (Lucas, 2003).

Eisenhart, Shrum, Harding, and Cuthbert (1988) define beliefs as "... a way to describe a relationship between a task, an action, an event, or another person and an attitude of a person toward it" (p. 53). LLBs held by students are of high significance in their endeavors to make sense of what happens in the classroom, their classroom behaviors, and how they learn languages (Asassfeh, 2015; Erlenawati, 2002; Fisher, 2013; Kolb, 2006). Taking into account the pivotal role to be played by students' LLBs, teachers could aid less successful students more in enhancing their proficiency in English by virtue of being aware of their LLBs (Mohebi & Khodadady, 2011). The views on the stability of beliefs regarding language learning over time are conflicting as while there are some studies yielding that LLBs are stable (Peacock, 2001; Richardson, 1996; Siew & Wong, 2010), a number of extant research shows that LLBs are open to change (Busch, 2010; Peng, 2011; Riley, 2009). Literature review shows that no research examining if BBL principles could result in changes in LLBs of students of any age group has been undertaken to date, and for this reason, the present study is likely to contribute to the existing body of knowledge on the in/stability of LLBs.

1.1. BBL

BBL is defined by Caine and Caine (1994) as "... acknowledging the brain's rules for meaningful learning and organizing teaching with those rules in mind" (p. 4). For Jensen (2000), "BBL is learning in accordance with the way the brain is naturally designed to learn" (p. 6). Brain research can help us understand how the brain stores and retrieves information (Frey & Fisher, 2010). The rationale behind BBL is fostering student learning via designing lessons in compliance with how the brain learns. The discrepancy between how the brain learns and it is forced to learn is accentuated in the literature (Hart, 1983; Sousa, 1998), which could hinder learning. Over the past few decades, more has been discovered about how the brain functions as a person learns something owing to the findings originating from neuroscience (Aldridge, 2012; Alferink & Dougan, 2010), which is attributed to the developments in imaging technology (Wolfe, 2001).

A close connection could be established between BBL and constructivism in that according to the constructivism, knowledge is gained by virtue of adding new information to the existing knowledge frames and by the active participation of learners (Pritchard, 2014; Tippins, Tobin & Hook, 1993). In lessons aligned to BBL principles, learning is also expected to be built upon students' existing knowledge. English language teachers can also make use of BBL approach in an effort to tailor their classroom practices to facilitate and promote student learning (Caine & Caine, 1994; Connell, 2009; Koşar, 2016) because

teaching conducive to brain-based research is considered to enable English language teachers to reach students (Lombardi, 2010).

The question to be raised about BBL approach is how it could be implemented in learning environment. Related literature review reveals that application of BBL approach in the classroom might be realized via instructional planning made in the light of BBL principles (Caine & Caine, 1994; Jensen, 2000). Limited number of research has been conducted on investigating the impact of BBL approach on students' language learning, one of which is done by Huang (2006). The results of that study reported on the positive correlation between applying BBL strategies and participants' achievement levels in English. The study carried out by Koşar (2016) demonstrated that the students receiving English language education planned in agreement with BBL principles outperformed the students being taught English according to traditional teaching methods on the post-proficiency exam.

1.2. LLBs

LLBs are regarded to exercise indispensable influence on students' success and failure in language learning, and hence, have been the subject of a number of research (Liao, 2006; Sakui & Gaies, 1999; Yang, 1999). The study conducted by Davis (2003) reported the students enrolled in Chinese-English translation course believed that teachers needed to correct the errors made by students to prevent the formation of bad habits, and that the younger the person started to learn a second language, the greater the probability of success in language learning was. Assasfeh (2015) carried out research to explore student EFL teachers' beliefs about language learning, the results of which demonstrated that student EFL teachers' LLBs showed variations in accord with their proficiency level, gender and academic year. Another study aiming to investigate LLBs of learners of German, French, and Spanish by administering BALLI (Horwitz, 1987) revealed the similarities between LLBs of learners of different language groups, which stands in stark contrast to conception that LLBs may change in accord with the language being learnt (Liab, 2006).

The belief about the place of natural talent in foreign language learning is examined in the research carried out by Mercer and Ryan (2009) with 9 tertiary-level EFL learners, the results of which revealed that the participants had diverse views on the effect of natural talent on foreign language learning. Despite the existence of a common mindset about the stability of LLBs, the literature entails research, the findings of one of which (Mohammadi, Birjandi & Maftoon, 2015) showed that training on learning strategies led to changes in tertiary-level students' LLBs, which were assumed to be context sensitive, and thus, open-to-change. For this reason, commencing to get education at university is construed to play significant roles in the development of students' LLBs (Peng, 2011), which are conceived to be related to their prior language learning experiences (Bangou,

Fleming & Kfourri, 2011; Mercer, 2011). Likewise, the research undertaken by Li and Ruan (2015) indicated that LLBs are “socially-situated constructs”, and the changes in the beliefs held by Chinese university-level EAP learners originated from such reasons as formative assessment, extracurricular activities, teachers etc.

Gender and proficiency level is envisioned to be parameters affecting students' LLBs as was found out in the research undertaken by Tang & Tian (2015). The study done by Fisher (2013) is another one demonstrating changes in students' LLBs which were favorable for language learning, and predominantly occurred in the group in which the participants explicitly explored their LLBs. Another study reporting shifts in students' LLBs is conducted by Riley (2009) in a nine-month English study. The research done by Busch (2010) also demonstrated that pre-service teachers' LLBs changed after taking second language acquisition course. Contrary to the research demonstrating changes in LLBs, the study carried out by Peacock (2001) reported no significant changes in ESL teachers' beliefs about language learning over a three-year-program. Similar to the findings presented in the research by Peacock (2001), Siew and Wong (2010) revealed in their study that pre-service teachers' LLBs were stable over 14 months with slight changes in 8 items.

Review of related literature reveals that there is no research having been undertaken with an eye to scrutinizing the influence of BBL on the probable shifts in LLBs. The researchers thereby believe that the results to be reported in this study could contribute enormously to the field of EFL learning and teaching.

2. Method

2.1. Research design and the setting

This case study concerns investigating if instructional practices planned in the light of BBL principles introduced by Caine & Caine (2000) could prompt changes in adult EFL learners' beliefs about language learning. In the preparatory school where this study was conducted, language skills are taught in an integrated way and the program is based on a modular system consisting of four modules in an academic year. Successfully passing a module necessitates getting at least 59.5 over 100 from two midterms, four quizzes, eight portfolios and online assignments.

Before commencing the intervention in BBL principles lasting 16 weeks, the participants were informed about the purpose of the study and signed the consent form. Afterwards, BALLI was administered so as to unearth participants' LLBs. To illustrate how the implications of brain-based learning principles were reflected into the classroom teaching, participants' interests were given particular importance in the selection of readings and preparation of supplementary materials, background music the tempo of

which was varied according to the type of the task the participants worked on was played, and a comfortable, safe and home-like learning environment was created. Three of the prepared lesson plans were sent to two experts on BBL to ascertain the lessons were properly designed in accord with BBL principles. In addition to getting lesson plans to be reviewed by the experts, one of the lessons was observed by an expert having been implementing BBL approach, and additionally, ten lessons were video-recorded with a view to having more lessons evaluated by the expert. At the end of the intervention, BALLI was administered again in order to find out if any changes took place in LLBs of the participants.

2.2. Participants

The participants of this research are 27 prep-class students enrolled in a preparatory program of a state university. The proficiency exam administered at the beginning of the academic year in which the present study was conducted revealed that the participants were at B1 level. All the participants passed the first module successfully and continued their English language education at B2 level in the last two months of the intervention. Concerning the demographic information about the participants, 10 of them were male while the remaining were female. The mean age of the participants were 18,26. All the participants were motivated to learn English well in that the medium of instruction in the university is English.

2.3. Data collection and analysis

BALLI developed by Horwitz (1987) was used to collect the data. BALLI uncovers students' LLBs in five major areas consisting of a) difficulty of language learning, b) foreign language aptitude, c) nature of language learning, d) learning and communication strategies, and e) motivation and expectations on a five-point likert scale ranging from strongly disagree (1) to strongly agree (5). Wilcoxon signed-rank test was run to answer the research question of whether the BBL intervention leads to changes in participants' LLBs.

3. Results

3.1. Findings as to the beliefs regarding difficulty of language learning

One of the major areas in BALLI subsumes beliefs about difficulty of language learning. Table 1 below demonstrates the statistical results yielded by Wilcoxon signed-rank test.

Table 1. Wilcoxon signed-rank test results of the beliefs in difficulty of language learning

	Negative Ranks			Positive Ranks			Test Statistics		
	N	Mean R*	Sum of R.	N	Mean R.	Sum of R.	Ties	Z	p
Some languages are easier to learn than others.	7	6,86	48	4	4,5	18	16	-1,93	,164
English is 1 a) a very difficult language, 2 b) a difficult language, 3 c) a language of medium difficulty, 4 d) an easy language, 5 d) a very easy language.	1	8	8	18	10,11	182	8	-3,720	,000
I believe that I will learn to speak English very well.	2	7	14	13	8,15	106	12	-2, 829	,005
If someone spent one hour a day learning English how long would it take them to speak it very well? 1 a) less than a year, 2 b) 1-2 years, 3 c) 3-5 years, 4 d) 5-10 years, 5 e) You can't learn English in 1 hour a day.	12	10,25	123	6	8	48	9	-1,670	,095
It is easier to speak than to understand English.	3	7,33	22	10	6,9	69	14	-1,707	,088
It is easier to read and write English than to speak and understand it.	7	7,64	53,50	8	8,31	66,5	12	-,384	,701

As can be seen in Table 1, a statistically significant does not exist in the beliefs regarding viewing some languages as easier than others, the time required to be able to speak English well, finding speaking English easier as opposed to understanding it, and viewing reading and writing as easier in comparison to speaking and understanding it, because the p values belonging to these beliefs are .164, .095, .088, and .701, respectively, which are bigger than .05. Table 1 demonstrates that a statistically significant difference appeared between participants' beliefs about the difficulty of English in pre- and post-BALLI, $Z = -3.720$, $p < .000$. The values for positive ranks in the belief of concern indicate that more than half of the participants' beliefs shifted towards deeming English as an easy language following the intervention. Concerning the belief in the ability to be able to speak English, Table 1 shows that post-BALLI ranks are statistically significantly higher than pre-BALLI ranks, $Z = -2.829$, $p < .005$. As is displayed in Table 1, as opposed to the number of participants believing that they would be able to speak English in pre-BALLI, more participants ($n = 13$) believed in the post-BALLI that they would be able to speak English.

3.2. Findings as to the beliefs about foreign language aptitude

Table 2 depicts the statistical results for beliefs about foreign language aptitude which are obtained from conducting Wilcoxon signed-rank test.

Table 2. Wilcoxon signed-rank test results of the beliefs about foreign language aptitude

	Negative Ranks			Positive Ranks			Test Statistics		
	N	Mean R*	Sum of R.	N	Mean R.	Sum of R.	Ties	Z	p
It is easier for children than adults to learn a foreign language.	5	6,7	33,5	7	6,36	44,5	15	-,462	,644
Some people have a special ability for learning foreign languages.	8	7	56	4	5,5	22	15	-1,427	,154
It is easier for someone who already speaks a foreign language to learn another one.	5	7	35	10	8,5	85	12	-1,538	,124
I have a special ability for learning foreign languages.	7	8,5	59,5	13	11,58	150,5	7	-1,810	,070
Women are better than men at learning foreign languages.	12	10,08	121	7	9,86	69	8	-1,077	,282
People who are good at mathematics or science are not good at learning foreign languages.	9	7,67	69	7	9,57	67	11	-,054	,957
People who speak more than one language are very intelligent.	11	11,36	125	10	10,6	106	6	-,337	,736
People from my country are good at learning English.	4	7,13	28,5	13	9,58	124,5	10	-2,331	,020
Everyone can learn to speak English.	4	5	20	12	9,67	116	11	-2,542	,011

Table 2 depicts no statistically significant difference exists between participants' beliefs of perceiving learning foreign languages as easier for children than adults, of special ability had by some people to learn foreign languages, of the easiness of learning a foreign language for a person already speaking one, of their aptitude for learning foreign languages, of viewing women as better than men at foreign language learning, of finding people who are good at maths and science bad at foreign language learning, and of viewing people speaking more than one language as very intelligent, as has been indicated by the p values of these beliefs. Table 2 also shows the statistically significant difference between participants' beliefs of viewing people from Turkey as good at learning English in the pre- and post-BALLI, $Z = -2.331$, $p < .020$. The values presented in positive ranks mean that almost half of the participants agreed with the belief that Turkish people are good at learning English subsequent to the intervention in BBL. Additionally, Table 2 shows that there is a statistically significant difference between pre- and post-BALLI in the belief that everyone can learn to speak English, $Z = -2.542$, $p < .011$. The N value in positive ranks mean that more participants believed in the post-BALLI that everyone can learn to speak English.

3.3. Findings as to beliefs about the nature of language learning

Table 3 presents the results in regard to the beliefs about the nature of language learning obtained from Wilcoxon signed-rank test.

Table 3. Wilcoxon signed-rank test results of the beliefs about the nature of language learning

	Negative Ranks			Positive Ranks			Test Statistics		
	N	Mean R*	Sum of R.	N	Mean R.	Sum of R.	Ties	Z	p
English is structured in the same way as Turkish.	1	2,5	2,5	3	2,5	7,5	23	-1	,317
It is necessary to know about English-speaking cultures in order to speak English.	5	5,2	26	11	10	110	11	-2,204	,028
It is best to learn English in an English-speaking country.	10	6,7	67	2	5,5	11	15	-2,351	,019
The most important part of learning a foreign language is learning vocabulary.	4	4	16	3	4	12	20	-,378	,705
The most important part of learning a foreign language is learning grammar.	11	10,86	119,5	9	10,06	9,5	7	-,550	,582
Learning a foreign language is different from learning other academic subjects.	3	5,5	16,5	15	6,83	1,5	9	-1,889	,014
The most important part of learning English is learning how to translate from my native language.	8	8,38	37	5	4,8	24	14	-1,546	,112

As can be seen in Table 3, a statistically significant difference between pre- and post-BALLI does not exist in the beliefs that English is structured in the same way as Turkish, the most important part of learning a foreign language is learning vocabulary, the most important part of learning a foreign language is learning grammar and the most important part of learning English is learning how to translate from my native language in that the p values of these beliefs are bigger than .05, .317, .705, .582, .112, respectively. Table 3 illustrates that there is a statistically significant difference in participants' belief of the necessity of learning about English-speaking cultures to speak English between pre- and post-BALLI, $Z = -2.204$, $p < .028$. The N value of positive ranks indicate that 11 participants' beliefs regarding the need for knowing about English-speaking cultures shifted towards believing that it is necessary to know about English-speaking cultures to speak English. Table 3 also displays the existence of a statistically significant difference between the participants' beliefs that learning a foreign language is different from learning other academic subjects, $Z = -1.889$, $p < .014$. The N value of positive ranks indicate that more than half of the participants believed in the post-BALLI that learning a foreign language is different from learning other academic subjects.

3.4. Findings as to the beliefs about learning and communication strategies

The fourth major area in BALLI comprises beliefs about learning and communication strategies. Table 4 below demonstrates Wilcoxon signed-ranks test results of the beliefs in this area.

Table 4. Wilcoxon signed-rank test results of the beliefs about learning and communication strategies

	Negative Ranks			Positive Ranks			Test Statistics		
	N	Mean R*	Sum of R.	N	Mean R.	Sum of R.	Ties	Z	p
It is important to repeat and practice a lot.	4	8	32	12	8,67	104	11	-2,065	,039
It is important to practice with online sources.	11	10,05	110,5	6	7,08	42,5	10	-1,636	,102
It is important to speak English with an excellent pronunciation.	14	9,07	127	3	8,67	26	10	-2,475	,013
You shouldn't speak anything in English until you can say it correctly.	8	9,69	77,5	11	10,23	112,5	8	-,723	,470
I enjoy practicing English with the native speakers I meet.	3	5,67	17	6	4,67	28	18	-,686	,493
It's OK to guess if you don't know a word in English.	4	5,75	23	6	5,33	32	17	-,486	,627
I feel self-conscious as speaking English in front of other people.	18	12,75	153	4	10	100	5	-2,671	,008
If you are allowed to make mistakes in the beginning, it will be hard to get rid of them later on.	14	9,93	139	4	8	32	9	-2,352	,019

Table 4 illustrates that a statistically significant difference was not found in the beliefs that it is important to practice with online sources, you shouldn't speak anything in English until you can say it correctly, I enjoy practicing English with the native speakers I meet, and It's OK to guess if you don't know a word in English, as could be understood from their p values, .102, .470, .493, .627, respectively. Table 4 displays that there is a statistically significant difference in participants' beliefs in the importance of practicing and repeating a lot between pre- and post-BALLI, $Z = -2.065$, $p < .039$. The values of positive ranks show that 12 participants believed that it is important to practice and repeat a lot in the post-BALLI. Another belief the p value of which indicates a statistically significant difference is the belief in the importance of speaking English with an excellent pronunciation, $Z = -2.475$, $p < .013$. The N value of negative ranks indicates that 14 participants did not believe in the post-BALLI that it is important to speak with an excellent pronunciation. The belief in feeling self-conscious as speaking English in front of other people is another belief displayed in Table 4 with a p value showing a statistically significant difference, $Z = -2.671$, $p < .008$. The N value of negative ranks means that 18 participants in the post-BALLI did not believe that they feel self-conscious as speaking English in front of other people. Furthermore, Table 4 depicts that there is a statistically significant difference between the beliefs of the participants in the pre- and post-BALLI with respect to viewing letting students make mistakes at the beginning as an impediment to discarding them later, $Z = -2.352$, $p < .019$. The N value of negative ranks means that, in the post-BALLI, 14 participants did not believe that allowing students to make mistakes at the beginning of foreign language learning causes difficulty in correcting them subsequently.

3.5. Findings as to the beliefs about motivation and expectations

Table 5. Wilcoxon signed-rank test results of the beliefs about motivation and expectations

	Negative Ranks			Positive Ranks			Test Statistics		
	N	Mean R*	Sum of R.	N	Mean R.	Sum of R.	Ties	Z	p
If I get to speak English very well, I will have any opportunities to use it.	2	7,5	15	16	9,75	156	9	-3,255	,001
If I learn English very well, it will help me get a good job.	3	2,5	7,5	1	2,5	2,5	23	-1	,317
People in my country feel that it is important to speak English.	3	4	12	11	8,45	93	13	-2,591	,010
I would like to learn English so that I can get to know its speakers better.	4	10,63	42,5	12	7,79	93,5	11	-1,354	,176

Table 5 demonstrates that no statistically significant difference exists in the beliefs that “If I learn English very well, it will help me get a good job”, and “I would like to learn English so that I can get to know its speakers better” for the p values of these two beliefs are .317 and .176, respectively. Table 5 illustrates that there is a statistically significant difference in the belief that speaking English well could lead to lots of opportunities to use it as a result of the preferences of the participants for this belief in pre- and post-BALLI, $Z = -3.255$, $p < .001$. The N value of positive ranks indicates that 16 participants believed in the post-BALLI that if they speak English very well, they will have a huge number of chances to use it. Another belief with a statistically significant difference is the belief about the conception had by Turkish people in deeming speaking English as important, $Z = -2.591$, $p < .010$. The N value of positive ranks means that 11 participants believed in the post-BALLI that people in Turkey feel that it is significant to speak English.

4. Discussion

The results revealed a statistically significant difference in 13 beliefs of a total of 34 beliefs, which parallels a number of studies in the related literature (Busch, 2010; Fisher; 2013; Li & Ruan, 2015; Mohammadi, Birjandi & Maftoon, 2015; Riley, 2009), while contradicting with the findings of some studies (Peacock, 2001; Siew & Wong, 2010). These findings mean that teaching English in agreement with the BBL principles could lead to changes in some of LLBs, and the following paragraphs are dedicated to commenting on the shifts in the beliefs in five major areas separately.

The results in regard to the beliefs in difficulty of language learning revealed the statistically significant difference in the belief of the participants about the difficulty of English in the post-BALLI as the number of the participants believing that English is an easy language was higher in the post-BALLI. Another belief in the area of the difficulty

of language learning with a statistically significant difference is the belief in being able to speak English. In the post-BALLI, the number of the participants believing that was higher. The changes in these beliefs are likely to originate from the intervention in BBL in that the rationale lying behind BBL approach is enhancing student learning. The lessons designed and taught according to the BBL principles could assist adult EFL learners in facilitating their learning process, and making them believe that they will be able to speak English, which is promising for EFL learners. In Turkey, commonly held beliefs regarding English language learning are taken-for-granted failure in developing the ability of speaking English regardless of several years devoted to learning it, and not considering English as a learnable language. However, the findings in this study indicated that the participants believed by virtue of the intervention in BBL principles that English was an easy language and they could learn to speak English well.

Similar to the changes occurred in the area of the beliefs regarding difficulty of language learning, some of the participants' beliefs in the area of foreign language aptitude significantly changed after the BBL intervention. One of the changes took place in the belief of viewing Turkish people skilled in learning English. The way the participants were taught English in the intervention helped them change their conceptions about the inaptness of Turkish people in learning English, which is a common misconception to be dispelled. At the end of the intervention, more participants believed in the ability of Turkish people in learning English. As well as the change in the belief in perceiving Turkish people good at learning English, the number of participants believing in the possibility of acquiring the ability of speaking English for anyone grew, which is another encouraging finding as the more people believe in the likelihood of success they might achieve, the harder they study to improve their speaking competence.

The results in relation to the beliefs in the nature of language learning indicated that more participants believed after the intervention in BBL that learning English is different from learning other academic subjects. The lessons planned in accord with the BBL principles resulted in a change in viewing learning English as distinct from learning other academic subjects in that how English and other subjects were taught to the participants in their prior education lives was not most likely in agreement with how they learnt English in the BBL intervention.

In the area of learning and communication strategies, a statistically significant difference was observed in three beliefs, one of which is about feeling timid as speaking English in front of other people. Fewer participants thought after the BBL intervention that they felt timid when speaking in front of other people, which is likely to stem from the intervention as setting up a safe learning environment in which student can feel comfortable is one of the primary objectives of teaching fine-tuned according to the principles of BBL. In view of how learning could be hampered as a consequence of high level of affective filter, the supporting role performed by the BBL intervention in creating

a safe and comfortable learning setting could be particularly promising as a medium to aid EFL learners in lowering their level of affective filter and boosting their learning thereof. Learning English in a comfortable and home-like environment also involves welcoming the errors made by learners. The statistically significant change occurring in the belief “if you are allowed to make mistakes in the beginning, it will be hard to get rid of them later on” indicates that following the BBL intervention, more participants believed that it would not be hard to discard the mistakes later on if students were allowed to make them in the beginning. Learners highly likely feel more anxious unless their mistakes are welcome, and the tension felt by students presumably impedes learning. Therefore, the intervention in BBL led more participants to be more tolerant of the mistakes they made and will probably continue to make in the future. Additionally, the results showed that less participants agreed upon the belief that it is important to speak English with an excellent pronunciation. This shift in this belief could be linked to being more tolerant of the mistakes they make.

The findings also yielded that after the intervention in BBL, more participants believed that they would have many opportunities to use English if they could speak it very well and another belief with a statistically significant difference is that Turkish people feel that it is important to speak English. Subsequent to the intervention in BBL, through the medium of making learning process meaningful for the participants, the number of the participants believing in the importance of being able to speak English well in having various chances to use it, and in the significance given by Turkish people to speaking English increased.

5. Conclusions

The findings reported in this study show that statistically significant changes took place in almost a third of a total of 34 beliefs in BALLI subsequent the intervention in BBL. The shifts in beliefs appear to have facilitative impact on the learning process of adult EFL learners and BBL intervention may thereby rise in importance in EFL teaching and learning. To put it simple, EFL learners' LLBs, the formation of which partially depends upon prior language learning experiences, exert impact on to what degree learners put effort into learning English and how they learn it. The intervention in BBL could induce favorable changes in adult EFL learners' beliefs about language learning, which is likely to assist them in the process of English language learning. The number of participants in the present study, however, is inadequate to generalize the results. For this reason, further research on examining the impact of BBL intervention on LLBs of learners of not only English but also other foreign/second languages needs to be undertaken in distinct contexts with different age groups to further the evidence on the finding that an intervention in BBL could produce changes in students' mistaken beliefs about language learning.

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