



EFL students' epistemic beliefs and their relations to critical thinking and reading achievement

*Aidha Azizah Amatullah**, *Ive Emaliana*, *Esti Junining*

Department of Language Education, Universitas Brawijaya, Indonesia

One of the key points of reading comprehension is epistemic beliefs. It can be explained as students' determination of the way of learning. Epistemic beliefs' relation with critical thinking and reading achievement has not yet been clarified. The study has the aim to explore the relationship between the epistemic beliefs' of students to their critical thinking and reading achievement. The method of the study is correlational. The participant of the research is 102 students from the 2019 batch of the English Language Education Program of reading comprehension class, A-E class in Universitas Brawijaya. The participants helped to fill the questionnaire. The researcher used SPSS to analyse the questionnaire that has been filled by the participants to know the result of the research. The result of SPSS's analysis showed that between epistemic beliefs and critical thinking, there is a very strong correlation and between epistemic beliefs and reading achievement, there is a strong correlation. Based on the result of the correlation from SPSS's analysis, it can be known that there is a close relation between epistemic beliefs, critical thinking, and reading achievement. The students who have higher epistemic beliefs will have high critical thinking and reading achievement than the students who lower epistemic beliefs. The study can be used to design a curriculum that takes into consideration the various levels of epistemic beliefs, and it can also be used to develop material and assessments for students as part of their learning process.

Keywords: epistemic beliefs, critical thinking, reading achievement

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*Correspondence:

Aidha Azizah Amatullah
aidhaazizah@student.ub.ac.id

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INTRODUCTION

Epistemic beliefs can be defined as one of the main features of reading comprehension. They are students' determination of way of learning. As mentioned by [Lonka, Ketonen, Vermunt \(2020\)](#) epistemic beliefs of university students are quite diverse. [Lupo, Jang, McKenna \(2017\)](#) stated that effective utilization of students' willingness to interact while participating in literacy activities has the potential to improve students' attitudes toward and capacity to engage in academic literacy practices [Berding et al \(2017\)](#) stated about the definition of epistemic beliefs, he stated that epistemic beliefs are beliefs of personal about how knowledge can be known and accepted. Epistemic beliefs in reading comprehension class affect the level of students' critical thinking and approach choices during the learning process. [Roohr et al \(2019\)](#) stated that higher education requires critical thinking as a learning result. [Braten et al \(2016\)](#) stated that epistemic beliefs in reading comprehension have functioned as guidance in the finding of their research development. Epistemic Beliefs have functioned to guide students' goals, upgrade the interest of students in reading, and increase students' comprehension.

One of the aspects that are a concern in reading class is reading comprehension, especially in teaching EFL students. [Emaliana et al \(2017\)](#) stated that the critical thinking of students can be upgraded by the progress of reading comprehension. There is another researcher who had the same point of view, [Wahyuni et al \(2018\)](#) stated that there is a relationship between reading comprehension, critical thinking skills, scientific literacy skills, and achievement motivation. It showed that students who have high reading comprehension skills have the high critical thinking, scientific literacy, and achievement motivation. There are several previous studies compared with the analysis. The reason of epistemic beliefs studies can be investigated deeper because it focuses on enhancing learners' interactions with their surroundings in order to achieve best academic results ([Ghufron & Suminta, 2020](#)). It is supported by [Chevrier & Muis \(2021\)](#), epistemic beliefs are more about mental processing, learning, and cognitive development. If students believe in complicated understanding, students will be less startled and frustrated, but students will have more excitement. Other studies tried to reveal the importance of epistemic beliefs, critical thinking, and reading achievement in different studies. [Mateos et al \(2016\)](#) stated that students who have a more sophisticated understanding of knowledge tend to see reading as more of a transforming process than a transmissive thing. [Lee & Chan \(2014\)](#) stated that students who acknowledged that teachers and textbooks are not the only source of information (sophisticated beliefs in Source) and that learning requires sufficient explanation (sophisticated beliefs in Justification) performed better in exams and open-ended assessment activities. [Hyytinen et al \(2014\)](#) stated that students' epistemological beliefs were intertwined into their critical thinking: they utilized critical thinking to improve knowledge and evaluate whether something was true or false. This study takes a critical look at the relationships between them. It focuses on EFL epistemic beliefs that are linked to critical thinking in order to predict students' reading skills.

Therefore there are two research problems in this study. The first research problem is whether any relation between students' epistemic beliefs and their critical thinking and the second research problem is whether there is any relationship between students' epistemic beliefs and reading achievement. The study gives enlightenment for a model for further study related to epistemic beliefs, critical thinking, achievement in reading, a guide for designing a curriculum that takes into consideration the various levels of epistemic beliefs so that in their process of learning it can be the basis for developing content and evaluation for the student, and concern for lecturers to select an approach that can facilitate students with various levels of epistemic beliefs to improve their critical thinking and achieve maximum reading achievement.

METHODS

The quantitative approach was the approach used in this study. It was used to analyze the issue of study by gathering numerical data with the aid of instruments ([Creswell, 2012](#)). The correlational method was the method of this study. A procedure to investigate whether there was a correlation between the study variables was the correlational method.

Source of Data

Two questionnaires (see in [Appendix](#)), the epistemic beliefs, and critical thinking questionnaire, and the score of the Reading Comprehension class mid-term test, are the data of this study. The data source is the study of A-E classes in about 139 students from the 2019 batch of the English Language Education Program at Universitas Brawijaya. The students involved were from a population of students who have taken the reading comprehension class. Reading comprehension is a course that the students can take in the third semester. The objective of the course is to help students to improve their reading skills by acquainting them with long textual texts as a receptive and productive ability.

Research Instrument

In this study, there are two kinds of research instruments used, which are questionnaires and the mid-term test scores of students in the Reading Comprehension class. The study aims to look into the relationship between students' epistemic beliefs, critical thinking, and achievement in reading. The questionnaire is used to assess the epistemic beliefs and critical thinking of students. The first questionnaire is the questionnaire on epistemic beliefs adopted from [Emaliana \(2017\)](#). The researcher uses 19 questions from the questionnaire's list of 39 questions. A critical thinking questionnaire adopted from [Cotrell \(2011\)](#) is the second questionnaire. From a total of 25 question items in the questionnaire, the researcher uses 22 question items. The question items chosen are the valid question item based on validity and reliability test by using SPSS.

Data Collection

In this research, the researcher prepared adopted questionnaires, namely epistemic beliefs and critical thinking questionnaires to be tried out to 25 students. After getting the try-out result, the researcher checked the validity and reliability of the questionnaire. Based on the validity and reliability test, the researcher chose valid question items of the questionnaire to get data. The method of gathering data was carried out by distributing two kinds of questionnaires and asking the mid-term test scores of students from the lecture in the Reading Comprehension class. The collection of data included reading comprehension students from the A-E class from the 2019 batch of the Universitas Brawijaya English Language Education Program who took the reading comprehension class. Through the Google Form, the questionnaire was distributed. The questionnaire filling process took 20 minutes. The data were analyzed to obtain the outcome after the data was obtained.

Data Analysis

The researcher analyzed, evaluated, and concluded the outcome by following these procedures after collecting the required data. Two forms of the questionnaire, namely epistemic beliefs and critical thinking questionnaire were examined by the researcher. In Reading Comprehension class, the writer analyzed the mid-term test scores of the score students. To do correlation analysis by inputting the score, the writer used SPSS (Statistical Package for Social Sciences). Based on the SPSS systematic review, the researcher analyzed the outcome and concluded it that applies to the issue of the research.

RESULTS AND DISCUSSION

The result is to show the relationship between students' epistemic beliefs and their critical thinking, and the relation between students' epistemic beliefs and their achievement of reading.

The Relation between Epistemic Beliefs and Critical Thinking

In this study, 102 participants from the 2019 batch of the English Language Education Program at Universitas Brawijaya who completed the questionnaire are participating in the reading understanding of students from the A-E class. The first problem of research is to find out the relation between epistemic convictions and critical thinking. The finding shows that, as shown in [Table 1](#), the correlation between epistemic beliefs and critical thinking shows clearly a very strong correlation.

TABLE 1 | Result of the Correlation between Epistemic Beliefs and Critical Thinking

Correlation			
		EB	ET
EB	Pearson Correlation	1	.511**
	Sig. (2-tailed)		.000
	N	102	102
CT	Pearson Correlation	.511**	1
	Sig. (2-tailed)	.000	
	N	102	102

**Correlation is significant at the 0.01 level (2-tailed)

The outcome of the correlation shows that .511 is the correlation coefficient between epistemic beliefs and critical thinking. The correlation considered significant at the 0.01 level is classified as a very strong correlation. P values is .000 < 0.01. It indicates a significant correlation between epistemic beliefs and critical thinking. The interpretation of the correlation is based on [Sarwono \(2006\)](#), as seen in [Table 2](#).

TABLE 2 | Pearson Correlation

No.	The Correlation Coefficient	Interpretation
1	0.00	No correlation
2	0.01-0.09	Weak correlation
3	0.10-0.29	Medium correlation
4	0.30-0.49	Strong correlation
5	0.50-0.69	Very strong correlation
6	0.70-0.89	Almost perfect
7	>0.90	

It reveals that there is a correlation between epistemic beliefs and the critical thinking of the student, based on a correlation study. It is categorized as a medium correlation according to [Sarwono \(2006\)](#) based correlation interpretation. So, it can be inferred that the higher the level of epistemic beliefs of the students, the higher their level of critical thought.

The Relation between Epistemic Beliefs and Reading Achievement

The second problem of the study is to figure out the relation between epistemic beliefs and achievement in reading. The result shows that, as seen in [Table 3](#), the relation between epistemic beliefs and reading achievement shows a strong correlation.

TABLE 3 | Result of the Correlation between Epistemic Beliefs and Reading Achievement

Correlation			
		EB	Reading
EB	Pearson Correlation	1	.436**
	Sig. (2-tailed)		.000
	N	102	102
Reading	Pearson Correlation	.436**	1
	Sig. (2-tailed)	.000	
	N	102	102

**Correlation is significant at the 0.01 level (2-tailed)

The outcome of the correlation shows that .436 is the correlation coefficient between Epistemic Beliefs and Reading Achievement. The correlation considered significant at the 0.01 level is known as a strong correlation based on [Sarwono \(2006\)](#). P values is .000 < 0.01. It implies that there is a significant correlation between epistemic beliefs and reading achievement. Based on the analysis of correlation, it reveals that there is a correlation between epistemic beliefs and the achievement of student reading. According to correlation interpretation based on [Sarwono \(2006\)](#), it is classified as a strong correlation. It can therefore be concluded that the higher the level of epistemic beliefs of the students, the better their reading achievement.

One of the aims of the research is to explore the relationship between the epistemic beliefs of students and critical thinking. Epistemic beliefs are one of the variables that influence critical thinking, depending on the explanation above. In the framework of high-order thinking skills,

epistemic beliefs affect the cognitive process, consisting of the capacity to interpret knowledge, draw assumptions and choices, assess and solve the issue. It is supported by [Berding et al \(2017\)](#) that epistemic beliefs are beliefs that have an impact on the knowledge and recognition process of students. The strategy and planning decisions to construct comprehension should be taken into consideration through epistemic beliefs. The result shows that personal beliefs had a positive relationship to critical thinking, based on the previous research carried out by [Braten et al \(2016\)](#). It is supported by [Greene & Yu \(2016\)](#), epistemic cognition, as well as the ability to produce, analyze, and apply knowledge, is required for critical thinking. The outcome of the coefficient correlation between epistemic beliefs and critical thinking, which shows a significant correlation, indicates it.

The second aim of the research is to investigate the relation between the epistemic beliefs of the student and the achievement of reading. The previous study conducted by [Rahmiati et al \(2019\)](#) examined the correlation of EFL university students' epistemic beliefs, learning strategies, writing apprehension, and writing performance, so the present study decides to conduct further research to find out the correlation between epistemic beliefs and the achievement of reading students' understanding of the A-E class from the A-E class from the 2019 batch of the English Language Education Program in Universitas Brawijaya. It indicates a positive and significant correlation between the two variables, depending on the results of the Pearson correlation between epistemic beliefs and reading achievement. It shows that the higher the level of epistemic beliefs of the students, the higher the achievement of their reading comprehension. The finding is supported by [Spray, Scevak, Cantwell \(2013\)](#) personal variations in the quality of learning outcomes can be explained by the beliefs about knowledge that students have to their learning.

CONCLUSION

It can be summarized from the study finding that epistemic belief are very related to the critical thinking and reading achievement of students, the higher the level of epistemic beliefs the better critical thinking and reading achievement of students. Focused on the study finding that the higher the level of epistemic beliefs, the higher the critical thinking and reading achievement of the students, the researcher has the following suggestion. The study should be a guide for further study related to epistemic beliefs, critical thinking, achievement in reading. Future studies should be carried out by the researcher who can emphasize the level of other students since the present study focuses on the student of the 2019 batch or the second-year student of the Universitas Brawijaya English Language Education Program. Developing a curriculum that takes into consideration the various levels of epistemic beliefs will be a guide to the English Language Education Program because it can be the basis for developing content and assessment for the student

in their learning process. It can also be a concern for lecturers to use an approach that can support students with a different level of epistemic beliefs to enhance their critical thinking and achieve maximum reading achievement.

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APPENDICES

Student Questionnaire on EFL Epistemic Beliefs Blueprint (Emaliana, 2017)

Purpose: to know previous students' beliefs on how to view learning English and how to learn English.

Dimensions	Sub-dimensions	Questionnaires	Question on the questionnaire		
1. What is knowledge	1.1 Certain Knowledge knowledge is static - tentative	-1	To learn English means different things to different students		
		+2	The definition of learning English in these days will be still relevant to be used in the future		
2. How to acquire knowledge	2.1 Fix Ability ability to learning is inherited-to improve over time	-3	A course in study skills would probably be valuable when learning English		
		-4	Students can decide whether they use more a textbook or not based on their need when learning English		
		+5	Going over a difficult textbook chapter which is written in English usually will not help you understand it.		
		+6	Some people are born good English learners; others are stuck with limited ability		
		+7	Lecturers should teach their students all there is to know about learning English		
		2.2. Omniscient authority Schraw, et al., 2002): learning comes from authority - learning can be done individually by everyone	+8	If lecturers gave really clear lectures with plenty good examples on learning English, I usually have to practice on my own	
			2.3 Simple knowledge learning is handed down by authority - knowledge is acquired through reason or logic experiences	+9	Being a good student of English generally involves memorizing grammar and tenses formulas
	+10			Sometimes you have to accept answers from your lecturers although you do not understand them	
			2.4 Foreign language aptitude	+11	It is easier for children than adults to learn English
	+12			It is easier for someone who already speaks English to learn another one.	
	+13			People who speak more than one language well are very intelligent	
	2.5 Learning and communication strategies	+14	It is important to repeat and practice a lot to learning English		
+15		If I heard someone speaking English, the language I am trying to learn, I would go up to them so that I could practice speaking the language			
	2.6 Motivation and expectation	+16	It is OK to guess if you do not know a word in English as the foreign language		
+17		If I learn to speak English very well, it will help me get a good job			
+18		Indonesians think that it is important to speak English as a foreign language			
+19		I would like to learn English so that I can get to know its speakers better.			

Critical Thinking Questionnaire Blueprint (Cottrell, 2011)

Purpose: to know students' critical thinking level

Dimensions	Question on the questionnaire
knowledge skill attitude	<ol style="list-style-type: none"> 1. I feel comfortable pointing out potential weaknesses in the work of expert 2. I can remain focused on the exact requirements of an activity 3. I know the different meanings of the word 'argument' in critical thinking 4. I can analyze the structure of an argument 5. I can offer criticism without feeling this makes me a bad person 6. I know what is meant by a line of reasoning 7. I am aware of how my current beliefs might prejudice fair consideration of an issue 8. I am patient in identifying the line of reasoning in an argument 9. I am patient at recognizing the signals used to indicate stages in an argument 10. I find it easy to separate key points from other materials 11. I am very patient in going over the facts in order to reach an accurate view 12. I am good at identifying unfair techniques used to persuade readers 13. I find it easy to evaluate the evidence to support a point of view 14. I find it easy to weigh up different points of view fairly 15. If I am not sure about something, I will investigate to fins out more 16. I can present my own arguments clearly 17. I understand how to structure an argument 18. I can spot inconsistencies in an argument easily 19. I am good at identifying patterns 20. I am aware of how my own up-bringing might prejudice fair consideration of an issue 21. I know how to evaluate source materials 22. I understand why ambiguous language is often used in research papers