Personal Epistemology of Middle Eastern Graduate Students at Oregon State University: Beliefs about Source of Knowledge

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My name is Hashim Alyousef and i am an international student doing my PhD at Oregon State University under Dr. Shane Brown. My focus in my research is about the personal epistemological beliefs of Middle Eastern students and the influence of culture on such beliefs. The research follows a qualitative research design using semi-structured interviews. My goals is to complete my PhD program and focus on education and academia in my home country of Qatar.

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Introduction

Education is an essential aspect of a human's life to achieve better ways of living facilitated by financial stability, self-dependency, and social equality. However, standardizing education for every individual is challenging due to the diverse backgrounds of educators and learners. Educators acknowledge that within each classroom, there exist multiple unique backgrounds. The different cultures present in a classroom can affect the way both students and teachers engage in a learning session. For students, other factors such as family background, language, culture, and socioeconomic status can play a role in learning. In turn, the differences in belief systems can be integrated into how students think about knowledge and knowing. Thus creating a classroom in which students have different epistemological beliefs. There exists a need for educators to understand the different epistemological beliefs of students that come from diverse cultural and ethnic backgrounds of students to accommodate in classroom settings and curricula.

Epistemology is defined as the theory of knowledge. Thus, personal epistemology is the theory of knowledge based on personal beliefs and values that are backed up by evidence of their claims [1], [2], [3]. Personal epistemology is thus how the mind relates to knowledge and reality and perceives the past, present, and future. For instance, reading the morning paper and forming judgments based on personal beliefs exemplify personal epistemology. The judgment in this situation was based on the individual's personal beliefs on the new knowledge gained from the paper.

Qualitative studies on epistemological beliefs remain unexamined thoroughly in the Middle East. Qualitative studies are essential because they provide unique and detailed insights into how epistemological beliefs are shaped within a student. Moreover, the stories told in qualitative studies help researchers understand how epistemological beliefs develop for students and understand the reason that such development occurs. Although culture and personal epistemology seem to be related and essential to the study, a starting point would be to examine the personal epistemology of graduate Middle Eastern (ME) students. The personal epistemology of ME students' needs to be studied to understand how those beliefs are shaped and developed and what may influence that development.

This research is part of a more extensive study that focuses on the personal epistemology of graduate Middle Eastern students at OSU. The research follows a qualitative research design to gain a better understanding of each individual's perspective on the dimension of source of knowledge within personal epistemology and how it develops within the individual. The research question for this study is:

1. What are the beliefs of Middle Eastern engineering students on the dimension of source of knowledge within personal epistemology?

Literature Review

Looking back at the history of personal epistemology research, Perry was the first to relate personal epistemology to students' learning processes. Perry was initially interested in why students responded differently to the values of university life and attributed those differences in

responses to an individual's personality [4], [5]. However, scholars critique the work of Perry due to identifying personal epistemology to be one-dimensional. A body of work on personal epistemology is attributed to the work of Schommer, who thought of personal epistemology as a system of beliefs that are multi-dimensional and develop independently of each other [4], [6]. Schommer's work was introduced in the early 1990s. It utilized a developed questionnaire that was administered to students to rate their degree of agreement on statements about knowledge and knowing on a 5-point Likert scale. Following the multi-dimensional concept, the questionnaire categorizes knowledge statements into four dimensions: Fixed ability, Simple knowledge, Quick Learning, and Certain Knowledge [6].

Following Schommer's framework of a multi-dimensional framework to understand personal epistemology, many researchers have developed their own frameworks with varying reliability and validity [7]. Notable researchers who contributed to building frameworks include Cunningham, Mason, et al., and Hofer et al. One emerging theme from the previous frameworks is including a dimension that questions explicitly the belief of source of knowledge [5]. The belief of source of knowledge can be explained as the where the students think knowledge comes from. Source of knowledge can be attributed to the nature of knowing in conjunction with justification of knowing [5]. Source of knowledge can range from seeing all knowledge transmitted by an authority to viewing knowledge as constructed by the knower's interaction with surroundings such as experts, world, and texts [5].

Individual experiences have been shown to reflect how people perceive and make sense of the knowledge being handed to those individuals. Individuals under authoritative governments often regard educators and textbooks as the primary sources of unquestionable knowledge, influencing the shaping of their personal epistemological beliefs. The same concept applies to the culture in which an individual experiences. For example, when considering Youn's study in Korea, the author emphasizes the contrast of the cultures between the two countries in individualism-collectivism, power-distance, uncertainty-avoidance, and masculinity-femininity. Thus, when discussing the results, Youn found that the teacher-student interactions in Korea showed that students are expected to follow orders from teachers, showing a teacher-centered approach, compared to a student-centered approach found in the US, allowing students to contradict and challenge teachers in exercises [8]. The goal of this research is to explore the dimension of source of knowledge of personal epistemology within graduate ME students at OSU.

Methodology

The research follows a qualitative research design through semi-structured interviews. The study is part of a more extensive comprehensive research study that utilizes phenomenology. Phenomenological researchers aim to uncover and describe the everyday experiences of the individual when interacting with a phenomenon in their everyday world [9]. The purpose of phenomenological research is to reduce the experiences of individuals with a phenomenon to understand the genuine essence of the phenomenon [9], [10]. The researcher's role involves identifying and comprehending participants' interpretations of the phenomenon by analyzing the participants' dialogue during the study [11], [12].

Data Collection

Purposive sampling was conducted to recruit graduate engineering students currently pursuing graduate degrees at OSU. A Qualtrics survey was sent to different ME associations at OSU which then was forwarded to graduate engineering students from the respective associations. The survey included demographic questions and questions that gauged the student's interest in participating in the study. The students who showed a willingness to participate were then prompted to provide contact information for further communication. The selection criteria required participants to have undergone education at any level in a Middle Eastern country. Three respondents were chosen for semi-structured interviews conducted via Zoom. The interview sessions were recorded and transcribed using computer software. Table 1 summarizes the demographics of the participants.

Table 1: Participant Demographics

Student	Gender	Degree Pursued	Previous Education	Major
101	Male	PhD	Saudi Arabia	Electrical and Computer Engineering
102	Male	PhD	Saudi Arabia	Civil Engineering
103	Male	PhD	Qatar	Electrical Engineering

Interview Protocol

The interview protocol, as part of a larger research, was developed based on Schommer's five dimensions of personal epistemology. For this study, the interview protocol focuses on the dimension of source of knowledge from personal epistemology. Interview questions will also include probing questions to elicit better graduate ME students at OSU to share their experiences with respect to the source of knowledge. Table 2 summarizes the interview protocol.

Table 2: Interview Protocol

Section	Subcategory	Interview Questions (theory)	*Probing Questions (conversational)*
General Background	N/A	How did you learn about this research project?	
		Tell me more about yourself.	
		Tell me about your family.	
		How did you learn about this institute?	
		Tell me more about your future plans.	
Personal Epistemology	Source of Knowledge	How is the course going?	
		Is there something you like/dislike? How would you change it?	

		What do you think of the text used in class?	
		How do you view the text used in class?	*Can you tell me more about that?*
		How do you define your instructor's role in the class?	*How does the instructor present the classwork to you?*
		Does that affect the way you learn? How so?	
		Do you have any questions for us?	

Analysis

The three transcribed interviews were analyzed as part of a more extensive phenomenological research study that utilized the following six steps for analysis: [13], [14], [15]

1. Overview and Refinement: Read the entire transcript of interviews to gain an overall understanding and eliminate unnecessary language, such as repetitive statements and linguistic fillers like "um" and "well."

2. Meaning Generation: Generate preliminary meanings and write interpretative summaries for emerging themes within the transcripts. This step involves deriving meaningful insights from the data.

3. Group Analysis: Analyze selected transcripts as a group to identify and refine overarching themes and meaning units, deepening the understanding of participants' stories.

4. Comparison of Experiences: Compare summaries and narratives to identify shared experiences and practices among participants thematically. This step involves identifying commonalities across individual accounts.

5. Pattern Identification: Identify patterns by linking emerging themes and preparing for the formulation of general descriptions. Look for connections that contribute to a more nuanced understanding.

6. General Descriptions: Discuss and unify themes and patterns found in participants' narratives, generating comprehensive and overarching descriptions. This final step aims to provide a synthesized interpretation of the data.

Results

The data analysis has revealed two major themes based on the participants' experiences. These two themes can be closely related to the dimension of source of knowledge and will be discussed in this paper. The results are early findings stemming from a more extensive phenomenological research study focusing on all dimensions of personal epistemology. The emerging themes are:

- Teacher as a main source of knowledge.
- Questioning the source of knowledge.

Teachers as a main source of knowledge

The three participants in the study attributed most of their knowledge to the teacher and expert. The participants have expressed their experience with attributing knowledge to the teacher by specifying that most of their knowledge comes directly from them. For instance, all students were asked about the instructor's role in a class they enjoyed taking during their time in college. Student 101 mentioned "it was more like less teaching, but more like demoing … I would prefer more teaching" Although Student 101 appreciated the course material and overall experience, he felt there was a need for more explicit teaching by the instructor to deepen their understanding of the subject. While Student 101 did not specify how the demoing occurs, he suggested that the class time was allocated to showing how things were done rather than explaining how things are done. Student 101 also believed at some point in his time in college that anything the teacher says is correct "back in time, yeah, I would take everything the teacher said as a hundred percent truth … In general, the teacher is always right". Similarly, Student 103 had a similar response:

> Interviewer: "Do you think that things that you learn, do you think that the result of this learning is because of the instructor?"
>
> Student 103: "I would say majority of it, yes."

While the majority does not imply that knowledge only comes from teachers, Student 103's response shows a reliance on learning from the instructor being a source of knowledge. Besides the teacher, knowledge can also be gained from the textbooks provided during the course. Student 102 was asked about his beliefs on the correctness of information in the textbooks provided in the course. Student 102 responded with "Not always, until the professors explain why the writer put those words in that section". Student 102 expressed that even though the textbook was written by an expert, there is still hesitation to accept the information in the textbook unless it has been validated by the instructor of the course. Providing an example, Student 102 explained:

> Student 102: Yeah, for example on the top of my head, but let's take the correlation example. For example. We know the correlation is based on the R, right?
>
> Student 102: But we don't know even though we know these are the equation and everything, but simplify, even the equation of the correlation author would help sometimes, and that would be done by knowledgeable professor who knows the basis to explain why this happened and why we are taking the correlation co. And that's just one example in my head.

Here, Student 102 emphasized the need for an instructor to clarify the thought process behind complex concepts, illustrating that even with a foundational understanding, guidance from a knowledgeable professor is crucial for deeper comprehension. Furthermore, we need a professor to explain the thought process behind creating the correlation coefficient.

Questioning the source of knowledge

While students' beliefs about the source of knowledge in the classroom were attributed to the authority presenting the information, the three participants had different experiences on questioning the authority. When Student 101 was asked about questioning the teacher when something was not clear he responded, "if something does not make sense, I will raise my hand and ask for clarification" However, this approach was not consistent across all the courses he has attended.

> Interviewer: "How would the teacher deal with you starting to ask questions about a theory? Does he encourage those kinds of questions?"
>
> Student 101: "Most of my teachers that I, that I met in my life will encourage that. I met a few, I would say like maybe less than three teachers, maybe two or three teachers that will discourage that. But there are, in my opinion, they are the exception, not the rule. Most teachers will encourage me to stop and talk and ask questions."
>
> Interviewer: "When you said maybe three teachers that didn't, when in your learning career or your learning journey did this happen?"
>
> Student 101: "One in maybe middle school and 1 or 2 in my bachelor's degree when I tried to do. So, in those incidents, I would assume that I like should be able to ask a question and stop the teacher or point out some mistakes, and they get visibly angry."

The experiences that Student 101 mentioned all occurred outside of the US educational system. The instances in which the authority figure refused to discuss theories and class materials happened during his time in Saudi Arabia, within the ME education system. A similar experience was mentioned by Student 102:

> Interviewer: "You mentioned that there was a difference between studying back home and then studying here in the us. When it comes to the professors back home and the professors here, what do you think is the main difference?
>
> Student 102: "You won't be given the opportunity to ask questions there … Back home, if you are allowed to ask a question, that question would be either answered with yes or no, and that's it."

Student 102's experience with questioning authority figures from his home country seemed stricter than Student 101. Instances where Student 101 faced denial for questioning seemed limited compared to Student 102's more generalized statement. Besides the experiences back home, Student 102 has demonstrated a different approach to questioning instructors in a classroom setting in the US: "Sometimes I go back and check if the professor explains … So sometimes I question it, but once you build that trust between you and the professor, you won't go and check again. You will trust 100%." The new approach shows a hesitation in asking without having enough background to back up the question, However, once he questions the instructor and receives the needed answer, trust is established between him and the instructor.

Hesitation in questioning instructors within Middle Eastern educational systems was also a topic that was discussed by Student 103:

> Interviewer: how do you feel when you correct a professor about something like a calculation mistake, for example?
>
> Student 103: “I would be very hesitant. I would think about it times before I raise my head. And also, kind of depending on the professor themself, if you've been in their class for a while, you would know how they would react to questions and whatnot. Most of the time they would take it in a nice way. Some of them they would get insulted.”

Even when instructors encouraged discussions and questioning theories discussed in a course, Student 103 felt hesitant about asking or correcting the instructor. When asked about the reason such hesitancy, he responded, “I think as part of our culture is that the instructor, whether that's a professor or a teacher or just like a teacher in high school… this person got to this point based on their knowledge and background, and you would have to be respectful of that.” The culture of a classroom in the ME plays a role in how students and teachers interact within the classroom setting.

Discussion

The main findings found from the interview session relate to the dimension of source of knowledge in the personal epistemology of graduate ME students at OSU. The first finding suggests that all three participants generally consider knowledge from an authority to be true. The second finding suggests that questioning knowledge from an authority in a classroom setting varies depending on the educational culture of the institute. However, even when questioning the authority figure in the classroom is encouraged, there is a noticeable hesitation in asking questions. The students who participated in the study came from two countries with similar authoritarian characteristics, politically and religiously. Respecting authority figures embedded in the culture of the Middle East in the education systems and outside of the education system. This can be seen politically, as it holds 8 of the ten remaining absolute monarchies. Within the school system, the authority figure can be simply the teacher teaching the course. When asked why they accept knowledge as correct by the teacher, student 101 says part of their culture can be thought of as a replacement to a parent: “you should treat them as if they are your parent.” When considering some of the ME, studies have shown that Middle Eastern culture is influenced by Muslim cultural values [16]. Both status and age can affect communication styles between individuals in middle eastern countries [16]. For example, when calling a person significantly older than you, it is considered impolite to call them by their first name, thus showing high regard for hierarchy in a family or society. The exact hierarchy can be present in the classroom setting in which the teacher is considered higher in status and age. Thus, respect is shown in both accepting knowledge and questioning the knowledge. Another example of the hierarchical status of teachers as an authority figure in a classroom can be seen in Arabic literature in the form of poems. Ahmad Shawqi, an Egyptian poet, is considered one of the most famous poets in the Arab world [17]. His poets are taught in schools as part of the Arabic language curricula in most Middle Eastern countries. One of the most famous poets named “A Great Saturday” begins with:

> “Stand for the teacher, give him full respect, the teacher’s rank is close to the prophet.”

Shawqi compares the hierarchical stance of a teacher to that of messenger of God. This provides insight into how respected the role of the teacher is in the classroom setting in a Middle Eastern educational system, thus sheds light on why hesitation exists when correcting or questioning the teacher. The data collected does not show clearly what causes the hesitation in asking or questioning the knowledge. On the contrary, the interviews reveal that within the same country (Saudi Arabia), we find two educational institutes with different approaches to the situation. Student 101 has said that there were multiple instances where questioning the teacher was not permitted, while student 102 was clear in saying there was no opportunity to ask a question. This implies that different institutes in the same country can have distinct educational cultures. On the other hand, it is difficult to conclusively say that this is the case since only two different students from Saudi Arabia were interviewed for this paper.

Qualitative studies on personal epistemology in different cultures, specifically the ME, are scarce. Studies that applied the previously discussed frameworks of personal epistemology in a different cultural setting tend to use a mixed-method approach to implement both the questionnaire and interview sessions with select participants. Karabenick and Moosa (2005) aimed to compare cross-national college students' epistemological beliefs about science between Oman and the US. The study adopts Hofer and Pintrich's four dimensions of personal epistemology, which include: Knowledge is simple versus complex, knowledge is certain versus changeable, knowing is justified based on dualistic, multiplistic opinions or evaluative standard of evidence, and the degree of reliance on authority to judge knowledge claims [18]. The instrument used consisted of a 35-item questionnaire on a 5-point Likert scale. The instrument was administered to 231 students in Oman, where the instrument was translated into Arabic (The first language of the people of Oman). The results of the study showed that more Omani students than US students believe that knowledge is certain. Moreover, Omani students were more likely to accept authorities' statements regarding scientific knowledge. The authors argue that some epistemological belief differences can be explained through the cultural differences between the countries. The result of the study suggests a difference in responses between Omani students and US students on three of the four dimensions of epistemological beliefs. The authors believed that cultural characteristics could be attributed to at least one dimension of epistemology, which concerns beliefs about authority.

Cultures have been shown to evolve through different means of globalization and multi-linear cultural evolution over time, and thus, we expect findings from 2005 to be different now. Multi-linear cultural evolution is human culture evolving through adaptations to different environments [19]. For example, how did the Bedouin culture of the Middle East evolve into several independent countries with their own laws and systems? Culture can be thought of as it relates to education, whether that be learning at an educational institute or learning while at home. The culture of an academic institute can affect the way individuals perceive knowledge. This results in generating two different types of students with different personal epistemology beliefs. For example, at one institution, the educational culture could help students challenge instructors to engage students in critical thinking. In contrast, other educational cultures at different institutions limit students to acknowledge what is being said by instructors as pure non-negotiable truths.

Personal epistemological beliefs have shown a relationship to education and learning in multiple ways, including engagement in learning and conceptual change [4], [20]. When looking at some of the education systems and styles placed in the Middle East, one must question how personal epistemologies develop and foster. For example, characteristics of Middle Eastern educational environments suggest that educators tend to use direct lecturing and textbook reading [21]. The use of direct lecturing in a teacher-centered approach, along with considering some of the cultural characteristics presented in the discussion, implies a loss of personal epistemology development among students of the Middle East. Education systems with limited student engagement provide no opportunity for students to engage in methods of learning that have shown to be among the best ways of teaching and learning, such as active learning. This poses a challenge for students, instructors, and educational institutes to recognize the need for change in the education system by acknowledging some of the limitations the current system creates. Educational institutes need to collaborate with instructors to build curricula that encourage students to challenge, discuss, and question the knowledge presented to them without hesitation.

Conclusion and Future Work

This research study aimed to explore the personal epistemology of Middle Eastern graduate engineering students at OSU. This study attempts to relate the source of knowledge dimension of personal epistemology to the Middle Eastern culture in terms of both home and academia. The findings of this study show that students predominantly accept knowledge presented by authority figures. Moreover, students often hesitate when it comes to questioning or approaching the authority figure in the classroom. The results suggest a difference between educational institutions, thereby indicating the existence of institutional culture. The findings imply a closer relationship between the cultural characteristics of the ME and education. For instance, a high regard for status and age creates a hierarchy that is also seen within the classroom setting.

It is important to note that our study should not be considered complete due to the limited data set presented in the research. Nevertheless, it provides an opportunity for future research on the personal epistemological beliefs of graduate engineering students from the ME. Future research can explore the differences in personal epistemology between males and females in the ME, examining the effects of culture on other dimensions of personal epistemology, such as stability of knowledge, and investigate the development of personal epistemologies within students over time.

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