

Dimensions of Epistemological Beliefs, Learning Goal Orientation, as Predictors of Deep Knowledge Acquisition Approach among Pre-Service Teachers in Nigeria

Mahmud Haruna Jikamshi

Department of Foundations of Education, University Putra Malaysia, Isa Kaita College of Education Dutsin ma (IKCOE), Nigeria

Maria Chong Abdullah

Samsilah Roslan

Habsah Ismail

Department of Foundations of Education, University Putra Malaysia
Corresponding Author Email: mariac@upm.edu.my

Doi:10.5901/mjss.2016.v7n4p

Abstract

This study aims to identify the relationship between three dimensions of epistemological beliefs (Simple knowledge, Certainty of knowledge, Quick learning), and learning goal orientation, in predicting deep knowledge acquisition approach among pre-service teachers. We conducted a quantitative correlational study with 418 pre-service teachers from colleges of education in Northern Nigeria. In conducting Pearson correlation and regression analyses, we found there is a significant relationship between all the dimensions of epistemological beliefs, learning goal orientation, and deep knowledge acquisition. More specifically, there is significant negative relationship between simple knowledge, quick learning, and deep knowledge acquisition. However, there is significant positive relationship between certainty of knowledge, learning goal orientation, and deep knowledge acquisition approach. The regression analysis indicates that simple knowledge (SK), certainty of knowledge (CK), and learning goal orientation significantly predict deep knowledge acquisition approach (DKA). However, Quick Learning (QL) did not significantly predict deep knowledge acquisition approach. The present study's implication is that, it provides insight into one causal mechanism whereby the dimensions of epistemological beliefs, and learning goal orientation impact on pre-service teachers deep knowledge acquisition approaches in typical college settings.

Keywords: Deep knowledge acquisition, epistemological beliefs, learning goal orientation, pre-service teachers.

1. Introduction

Previous literature showed that, there exist a relationship between students' knowledge acquisition approaches and the dimensions of epistemological beliefs, and goal orientations (Muis, 2004; Mohamed, El-Habbal, & Shams, 2013). For instance, Schommer, (1990) indicates that the students' epistemological beliefs impact students' knowledge acquisition approaches and their subsequent learning outcomes. Similar research reports (Pajares, & Schunk, 2005; Pintrich & Schunk, 2002) indicates that, student's goal orientations significantly affect their knowledge acquisition approaches in typical college settings. It is no wonder, therefore; education and psychology researchers have found a wide range of cognitive and motivational variables that affects students' knowledge acquisition approaches in typical college settings (Senemoglu, 2011; Entwistle, 2000).

It is important for pre-service teachers to make use of effective and meaningful knowledge acquisition approaches during their college study period. This would greatly influence the quality of their knowledge acquisition and subsequently have an impact on their students/pupils in the classroom as teachers, especially after their graduation from the college. For this reason examination, and understanding knowledge acquisition approaches and factors influencing the adoption of one particular type of knowledge acquisition approach or the other among pre-service teachers become necessary for educators and education researchers.

However, in contemporary researches in Nigeria, little is known about the cognitive and motivational variables that affect pre-service teachers' knowledge acquisition approaches in colleges. This is despite the general outcries from the general public on the poor teaching quality of graduates from these Colleges (Akinbote, 2009; Akinsolu, 2010; NCCE,

2010). Therefore, this study intends to examine the relationships and the predictive ability of the dimensions of epistemological beliefs, and learning goal orientation on deep knowledge acquisition approach among pre-service teachers in Nigerian Colleges of Educates (COEs). This will greatly enhance the quality of education of our future teachers, and improve the quality of their training programs in our colleges.

2. Literature Review

Knowledge acquisition is processes of information processing that is fundamental to human survivals, which begins at early age of individuals (Piaget, 1969; Kuhn, 1995) and continue throughout human life (De corte, 2011). The success of these processes of knowledge acquisition are gauged as to how well that information can be remembered or re-produced in a way that makes sense and meaning for future use (Bartol, et al., 2002; Karkaulian, 2009).

In the contemporary cognitive literature, Marton and Saljo, (1976) were credited for introducing two opposite constructs that give qualitative descriptions of students' knowledge acquisition approaches in typical college or university settings. They conducted an empirical study on the qualitative differences of students' knowledge acquisition approaches that consequently result in the introduction of the two constructs, deep and surface knowledge acquisition approaches (Jong, 1996; Evans, 2003). The terms "deep-level processing" and "surface-level processing" were used by Marton and Sa'ljo, (1976) to describe the way students approach particular knowledge acquisition tasks, such as reading a simple academic text and such other similar learning tasks while in the college. According to Evans, Kirby, & Fabrigar, (2003) and Cano, (2005) these constructs were accepted, expanded and instruments were develop to measure them by Entwistle, & Ramsden, (1983) and Biggs, (1987) among others.

Students adopting the deep approach to knowledge acquisition are willing to understand, and they are active in their studies. They also try to relate ideas and look for patterns and principles using prior knowledge and other mental resources (Cano, 2007). Thus, they consider knowledge acquisition as an internal mental process to them (Entwistle, McCune & Walker, 2000).

In contrast, students who adopt the surface knowledge acquisition approach tend to be more interested in memorizing the material without understanding. Focuses on reproducing content aimlessly, thus, lacking purpose of understanding and they use different forms of rote learning (Entwistle & Peterson, 2004). In this regard therefore, deep knowledge acquisition approach is more likely to result in a high level of understanding and effective learning whereas surface approach is likely to lead to a low level of understanding and ineffective learning among learners (Entwistle, 2000).

Epistemological beliefs involve learners' beliefs about knowing, the nature of knowledge, and knowledge acquisition (Hofer & Pintrich, 1997; Schommer, 1990). The theory of students' epistemological beliefs originated from the work of Perry, (1970) who conceptualized that, students' epistemological belief is a single dimension. However, Schommer, (1990) argues that, human epistemological beliefs are too broad and complex to be explained or described as a single dimension, hence the introduction of epistemological beliefs as multidimensional, and based on that epistemological beliefs was categorized in to five independent dimensions and numerous scholars develop instruments to measure them (Scraw, Dnkle, and Bendixene, 2002; Schommer-Aikins, 2004).

However, Shommer, (1993) asserts that, out of the five dimensions only three are predictors for students' knowledge acquisition in colleges these are: certainty of knowledge, simple knowledge, and quick learning. Cano, (2005) uses the three dimensions in order describe and examined the predictive ability of epistemological beliefs among European secondary school students. In this study also, the same three dimensions were used.

Educational research indicates that students' epistemological beliefs influence students' knowledge acquisition approaches and subsequent learning outcomes in colleges (Schommer, 1990). Previous literatures have found a significant relationship between epistemological beliefs and knowledge acquisition approaches among students (Kizilgunes, Tekkaya & Tekkaya, 2009; Bronwee & Berthelsen, 2006; Ismail, Hassan, Muhamad, Ali, & Konting, 2013). In one of the research findings, Cavallo et al. (2004) revealed that students' higher beliefs on the dimension of certainty of knowledge correlated positively with the dimension of surface knowledge acquisition, and negatively relate to deep knowledge acquisition.

Achievement goal theory posits that individuals engage in academic activities to fulfill different goals. According to these theorists, the goals learners seek will generate the framework within which they translate and respond to academic task (Dweck, 1986; Elliott, & Dweck, 1988). The theorists further identified two types of goals: learning goal and performance goal orientations (Elliott, & Dweck, 1988). It was asserted that, students adopting learning goal orientation are more concerned with demonstrating their ability and try to understand the course material. Also, these groups of students are intrinsically motivated to learn. While, those that adopt performance goal orientation are more concerned

with demonstrating to themselves, their peers, teachers, and even parents that they are smart, thus they are extrinsically motivated (Elliot et al. 1999). The learner's goal orientations have been found to have an impact on the use of cognitive strategies often employed by the learners (Zimmerman, & Dibenedetto, 2008). Also Elliot et al. (1999) found that students' goal orientations were related to their knowledge acquisition strategies, with those students adopting learning goals tend to use deeper knowledge acquisition processing strategies, compared to those who adopted performance goals, who tend to use more of surface knowledge acquisition approach.

Previous researches have confirmed that, students who adopted deep knowledge acquisition tended to earn higher grades, had long-term information retention, actively sought integration of information and had high qualitative learning outcomes (Marton & Säljö, 1976; Entwistle, et al., 1983; Biggs, 1987; Kyndt, Raes, Dochy, & Janssens, 2012).

In Nigeria the product of Colleges of Education (COEs) is often being criticized and described as; Unproductive, lacking knowledge, poor morale, low level qualitative learning outcomes, low level commitment to teaching profession (Adeosun, et al., 2009; NCCE, 2010; Ololube, Amaele, Kpolovie, Onyekwere, & Elechi, 2012). It is therefore crucial that pre-service teachers in Nigeria possess and use effective knowledge acquisition approach during their pre-service education periods that need to be understood. Based on that, the following null hypotheses were tested.

3. Research Hypotheses

- **H₀₁** There is no significant relationship between the dimensions of epistemological beliefs: simple knowledge, certainty of knowledge, Quick learning and deep knowledge acquisition approach among pre-service teachers in Nigeria
- **H₀₂** There is no significant relationship between learning goal orientation and deep knowledge acquisition approach among pre-service teachers in Nigeria.
- **H₀₃** The dimensions of epistemological beliefs: simple knowledge, certainty of knowledge, and Quick learning did not predict deep knowledge acquisition approach among pre-service teachers in Nigeria
- **H₀₄** The dimension of learning goal orientation did not predict deep knowledge acquisition approach among pre-service teachers in Nigeria.

4. Methodology

This study is quantitative correlational study. The participants of this study consist of 418 pre-service teachers who are attending Colleges of Education (COEs) in Northern Nigeria. All the participants are final year students in the Nigeria Certificate in Education (NCE) programme. A multi-stage cluster sampling technique was used to collect data for this study. The participants comprise of 215 males representing 51.4% and 203 females representing 48.6%. All the participants are within the age range of 20 to 40 years, with majority (82.4%) between the ages of 20 to 24 years, and the remaining (17.6%) are between the ages of 25 to 40 years of age.

4.1 Instruments

The participants were provided with a booklet containing a covering letter on instructions about their response to the questionnaire. There are 46 items measuring all the constructs under the study.. These are; deep knowledge acquisition 20 items, epistemological beliefs dimensions 20 items and learning goal orientation 6 items.

To measure pre-service teachers knowledge acquisition approach, we used Approaches and Study Skills Inventory for Students (ASSIST) developed by Tait, Entwistle, McCune, (1998), in its most recent version (Entwistle et al. 2013). In the questionnaire, 20 items are measuring deep knowledge acquisition approach, thus these items were used in obtained information on pre-service teachers levels of deep knowledge acquisition. This dimension is the scales of interest to the researchers, as previously used by Richardson (2000), and Richardson, and Lawless, (2002).

In measuring pre-service teachers epistemological beliefs, the primary instrument used was epistemological beliefs inventory (EBI) Schraw, Bendixen, & Dunkle, (2002). In the (EBI) the following subscales were used to obtain information on pre-service teachers' levels of epistemological beliefs, these are: simple knowledge with 7 items, certain knowledge with 8 items and quick learning with 5 items, thus making a total of 20 items measuring epistemological beliefs. Schommer, (1990) asserts that these 3 scales have stronger predictive ability on students' performances.

Also in this study, Achievement goal orientation questionnaire by Elliot and Church (1997) was used in measuring learning goal orientation. The researchers adopt only 6 items that were used in obtained information on the dimension of learning goal orientation among pre-service teachers.

All the items consist of statements describing students' general study strategies or approaches, beliefs about the nature of knowledge and their motive for engaging into any academic learning task in the college. The participants responded to each of the statements using a 5-point Likert scale ranging from 1 (never true of me) to 5 (very true of me). Students responded to the instruments during regular class lecture of education psychology course under the supervision of their educational psychology course lecturers who volunteer to assist the researchers. The educational Psychology lectures that are to administer the questionnaire were earlier on briefed by one of the researchers on how to administer the instruments. Students were told about the purpose of the instruments and were assured that there were neither correct nor wrong answers. After this short explanation, students were asked to complete the questionnaires on their own. They were advised to think about each question and answer it as it applied to them in 50 minutes. The researchers requested for permission from the original authors for adopting the instruments with some mild adjustment to meet the researcher's needs. Permission was granted by all the authors via electronic mail to the researchers.

4.2 Procedure

The research was conducted in randomly 6 selected Colleges of Education in Northern Nigeria. Therefore, prior to the administering the questionnaire to the randomly sampled participants in all the affected colleges of education (COEs), the researchers obtained permission from the various provosts of the colleges through written official letters by the researchers. The request was granted and the research was conducted in all the 6 colleges of education, this was made possible with the help of some volunteered lecturers from these colleges.

5. Data Analysis

Structural equation modeling (SEM) was conducted as the statistical technique for analyzing the data for this study. This is because it has the power to simultaneously test hypothetical relationships among multiple predictors and criterion variables (Hoe, S. L. 2008). Pearson correlation analysis was conducted in examining the relationships between predictor variables: simple knowledge, certainty of knowledge, quick learning, learning goal orientation and the criterion variable, deep knowledge acquisition approach among pre-service teachers. The correlation matrix obtained from the structural output is presented in Table 5.1 below. However, for the purpose of interpretation of the strength of Pearson's correlation (r), in this study, the researchers use Cohen, (1992) guidelines, they suggest that, if the value of ($r = .10-.29$) it represented low correlation, ($r = .30-.49$) medium correlation, and ($r = .50-1.00$) high correlation effect

5.1 Results

The results of the study are presented below, with the results summary of correlation matrix of Deep knowledge acquisition and Dimensions of epistemological beliefs, and learning goal orientation in Table 5.1 below.

5.1.1 Testing the hypotheses

All the hypotheses were tested and the result obtained was presented as per below:

5.1.2 Pearson Correlation Analysis

H₀₁ There is no significant relationship between the dimensions of epistemological beliefs: simple knowledge, certainty of knowledge, quick learning and deep knowledge acquisition approach among pre-service teachers in Nigeria

The findings of this study from the structural analysis indicate that, there is significant negative relationship between simple knowledge and deep knowledge acquisition approach ($r = -.688$, $P < .01$). Also, there is significant medium negative relationship between quick learning and deep knowledge acquisition approach ($r = -.479$, $P < .01$). However the result revealed a significant positive relationship between certainty of knowledge and deep knowledge acquisition approach ($r = .394$, $P < .01$). Therefore the null hypothesis is rejected.

Table 5.1. The summary of Correlation Matrix of Deep knowledge acquisition and Dimensions of epistemological beliefs, and learning goal orientation

| Variables | Y ₁ | X ₁ | X ₂ | X ₃ | X ₄ |
|---|----------------|----------------|----------------|----------------|----------------|
| Y ₁ (Deep Knowledge Acquisition) | 1 | | | | |
| X ₁ (Simple Knowledge) | -.688** | 1 | | | |
| X ₂ (Certainty of Knowledge) | .394** | -.699** | 1 | | |
| X ₃ (Quick Learning) | -.479** | .678** | .488** | 1 | |
| X ₄ (Learning goal orientation) | .444** | -.403** | .490** | .249** | 1 |

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

* Correlation is significant at the 0.05 level (2-tailed).

H₀₂ There is no significant relationship between learning goal orientation and deep knowledge acquisition approach among pre-service teachers in Nigeria.

According to correlation analysis in table 5.1 above it indicates that, there is significant medium positive relationship between learning goal orientation and deep knowledge acquisition ($r=.444$, $P<.01$), therefore, the null hypothesis is rejected.

5.1.3 Regression Analysis

H₀₃ The dimensions of epistemological beliefs: simple knowledge, certainty of knowledge, and quick learning did not predict deep knowledge acquisition approach among pre-service teachers in Nigeria

Based on the structural analysis, the result showed that, about 86% of variance in deep knowledge acquisition (DKA) was explained by the dimensions of epistemological beliefs; simple knowledge, certainty of knowledge, quick learning, and learning goal orientation. The finding from Table 5.2 below indicates that, simple knowledge (SK) significantly predict deep knowledge acquisition (DKA) ($\beta =-.585$, CR,-15.423, $p=.000$). Also the finding indicates that certainty of knowledge (ECK) predict deep knowledge acquisition (DKA) ($\beta =-.104$, CR,-3.283, $p=.001$), thus the null hypothesis in this case is not supported.

Table 5.2 Unstandardized and standardized regression weight

| Hypothesized relationships | (B) | S.E | (β) | CR | p |
|----------------------------|-------|------|-------|---------|------|
| DKA <--- EPB_SK | -.633 | .041 | -.585 | -15.423 | .000 |
| DKA <--- EPB_ECK | -.188 | .057 | -.104 | -3.283 | .001 |
| DKA <--- EPB_QL | .002 | .096 | .001 | .018 | .986 |
| DKA <--- LGO | .984 | .097 | .680 | 10.134 | .000 |

DKA R² = .86; Note: LGO: Learning Goal Orientation; EPB_SK:- Simple Knowledge; EPB_ECK:- Certainty of Knowledge; EPB_QL:- Quick Learning; DKA:-Deep Knowledge Acquisition

However, the result revealed that Quick Learning (QL) did not significantly predict deep knowledge acquisition (DKA) ($\beta =-.001$, CR, .018, $p=.986$). Therefore, the null hypothesis is hereby upheld.

H₀₄ The dimension of learning goal orientation did not predict deep knowledge acquisition approach among pre-service teachers in Nigeria.

On the dimension of learning goal orientation the result indicates that, learning goal orientation significantly predict deep knowledge acquisition (DKA) ($\beta =-.680$, CR, 10.134, $p=.000$). Therefore the null hypothesis is rejected.

6. Discussion

The study investigates the relationship between three dimensions of epistemological beliefs simple knowledge, certainty of knowledge, quick learning, learning goal orientation, in predicting deep knowledge acquisition approach among pre-service teachers in Nigeria. The following relationships were revealed: the epistemological beliefs dimensions of simple knowledge and quick learning were found to be significant and negative related to deep knowledge acquisition. More so the findings of this study were consistent with the findings from the previous literatures and theoretical expectations. In most of the previous literatures, negative relationships were reported in the relationships between the dimensions of epistemological beliefs and deep knowledge acquisition approaches among students (Schommer, 1997; Kizilgunes,

Tekkaya & Tekkaya, 2009). Therefore the finding does not support the hypothesis, thus leading to the rejection of the null hypothesis.

Also in this study, the finding revealed that, simple knowledge and certainty of knowledge significantly predict deep knowledge acquisition approach. This finding was in conformity with the findings from the previous literatures (Rodríguez, & Cano, 2006). This also is in agreement with the theoretical expectations (Schommer, 1997). In this case also the null hypothesis is not supported.

However, unusual relationship was revealed in the correlation analysis in this study, where the result revealed a significant positive relationship between certainty of knowledge and deep knowledge acquisition approach, this finding contradicts the finding from the previous literature and the theoretical expectations. Also in the regression analysis one of the findings revealed another anomaly, where by quick learning did not predict deep knowledge acquisition approach. These two findings contradict the theoretical expectations of epistemological beliefs and relationships with knowledge acquisition (Schommer, 1997). And the reports from the previous literature (Kizilgunes, Tekkaya & Tekkaya, 2009). The relationship between certainty of knowledge and deep knowledge acquisition approaches and the non-predictive ability of quick learning on deep knowledge acquisition, all contradict the theoretical expectations and the existing literature. However, all these could be attributed to the nature of the category of students being examined in this study. For example, in Nigeria, teacher education is aimed at producing highly motivated, conscientious and efficient classroom teachers for all levels of our educational system and the curriculum further encourages the spirit of inquiry and creativity among teachers (NPE, 2007). Critical looks at all these characteristics are part of pre-requisite condition for one to adopt deep knowledge acquisition approach. Another possible reason may be due to the multidimensional approach of epistemological belief system, where by individuals can have more naive beliefs on one dimension and less naive beliefs on others (Schommer, 1997). These findings lead to supporting the two hypotheses.

Also, the finding in this study showed that, there is significant positive relationship between goal orientation and deep knowledge acquisition. This result is consistent with the findings of numerous scholars whose findings reveal that, there is a relationship between students' goal orientations and their selection of knowledge acquisition approach. Those adopting learning goals are more likely to use deep knowledge acquisition approaches than those who adopted performance goal orientation (Elliot et al., 1999; Entwistle, Tait & McCune, 2000; Zimmerman, & Dibenedetto, 2008). Therefore, the hypothesis is hereby rejected.

The findings revealed that, learning goal significantly predicts deep knowledge acquisition approaches positively. This finding is in conformity with the contemporary literature that posit that learning goal relate to deep knowledge acquisition positively and relate to surface knowledge acquisition negatively (Elliott & Dweck, 1988; Elliott & McGregor, 2001). This is in conformity with the theoretical expectation (Elliott & McGregor, 2001).

7. Conclusion and Implications

Students possess diverse epistemological beliefs and these beliefs potentially affect their knowledge acquisition approach in a typical classroom situation. A significant theoretical implication of this study is that there is a statistically significant relationship between students' knowledge acquisition approach and epistemological beliefs. Also the study supported the hypothesis proposed by Schommer, (1993) that, the three dimensions of epistemological beliefs (simple knowledge, certainty of knowledge, and quick learning) have possible predictive ability on students' knowledge acquisition approaches.

One of the practical implications for this study is that, pre-service teachers in Nigeria, need to be educated and encouraged by their college lectures to develop sophisticated epistemological beliefs and meaningful knowledge acquisition approaches (deep learning). In line with this idea, it is necessary to promote meaningful learning approaches among pre-service teachers in Nigeria, so that they are encouraged to go beyond memorization of facts and terminologies and make sense of their learning experiences in the college. Only then can pre-service teachers become meaningful learners who are better able to maintain knowledge and apply it to new situations and impart the same to their students/pupils. More research needs to be conducted on how best pre-service teachers epistemological beliefs and knowledge acquisition approaches can be developed in a typical college situation.

References

- Akinbote, O. (2009). Problems of teacher education for primary schools in Nigeria: beyond curriculum design and implementation. *International Journal of African & African-American Studies*, 6(2).
- Akinsolu, A. O. (2010). Teachers and Students' Academic Performance in Nigerian Secondary Schools: Implications for Planning.

- Florida Journal of Educational Administration & Policy, 3(2), 86-103.
- Bartol, K. M., & Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership & Organizational Studies*, 9(1), 64-76.
- Biggs, J. B. (1987). *Student Approaches to Learning and Studying. Research Monograph*. Australian Council for Educational Research Ltd., Radford House, Frederick St., Hawthorn 3122, Australia.
- Brownlee, J., & Berthelsen, D. (2006). Personal epistemology and relational pedagogy in early childhood teacher education programs. *Early Years*, 26(1), 17-29.
- Cano, F. (2005). Epistemological beliefs and approaches to learning: Their change through secondary school and their influence on academic performance. *British Journal of Educational Psychology*, 75(2), 203-221.
- Cano, F., & Rodriguez, L. (2007). The learning approaches and epistemological beliefs of university students: a cross-sectional and longitudinal study. *Studies in Higher Education*, 32(5), 647-667.
- Cavallo, A. M., Potter, W. H., & Rozman, M. (2004). Gender differences in learning constructs, shifts in learning constructs, and their relationship to course achievement in a structured inquiry, yearlong college physics course for life science majors. *School Science and Mathematics*, 104(6), 288-300.
- Cohen, J. (1992). Statistical power analysis. *Current directions in psychological science*, 98-101
- De Corte, E. (2011). Constructive, self-regulated, situated, and collaborative learning: An approach for the acquisition of adaptive competence. *Journal of Education*, 33-47.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American psychologist*, 41(10), 1040.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational psychologist*, 34(3), 169-189.
- Elliott, E. S., & Dweck, C. S. (1988). Goals: an approach to motivation and achievement. *Journal of personality and social psychology*, 54(1), 5.
- Elliot, A. J., & McGregor, H. A. (2001). A 2x2 achievement goal framework. *Journal of personality and social psychology*, 80(3), 501.
- Entwistle, N. (2000, November). Promoting deep learning through teaching and assessment: conceptual frameworks and educational contexts. In *TLRP conference, Leicester*.
- Entwistle, N. (2005). Learning outcomes and ways of thinking across contrasting disciplines and settings in higher education. *Curriculum Journal*, 16(1), 67-82.
- Entwistle, N. J. (1997). The approaches and study skills inventory for students (ASSIST). *Edinburgh: Centre for Research on Learning and Instruction, University of Edinburgh*.
- Entwistle, N. J. (2013). *Styles of learning and teaching: An integrated outline of educational psychology for students, teachers and lecturers*. Routledge. of educational
- Entwistle, N. J., & Peterson, E. R. (2004). Conceptions of learning and knowledge in higher education: Relationships with study behaviour and influences of learning environments. *International Journal of Educational Research*, 41(6), 407-428.
- Entwistle, N., McCune, V., & Hounsell, J. (2003). Investigating ways of enhancing university teaching-learning environments: Measuring students' approaches to studying and perceptions of teaching. *Powerful learning environments: Unravelling basic components and dimensions*, 89-107.
- Entwistle, N., Tait, H., & McCune, V. (2000). Patterns of response to an approaches to studying inventory across contrasting groups and contexts. *European Journal of Psychology of Education*, 15(1), 33-48.)
- Entwistle, N. (2000). Approaches to studying and levels of understanding: The influences of teaching and assessment. *Higher Education-New York-Agathon Press Incorporated-*, 15, 156-218.
- Evans, C. J., Kirby, J. R., & Fabrigar, L. R. (2003). Approaches to learning, need for cognition, and strategic flexibility among university students. *British Journal of Educational Psychology*, 73(4), 507-528.
- Evans, E. M., Schweingruber, H., & Stevenson, H. W. (2002). Gender differences in interest and knowledge acquisition: The United States, Taiwan, and Japan. *Sex Roles*, 47(3-4), 153-167.
- Hoe, S. L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of applied quantitative methods*, 3(1), 76-83.
- Hofer, B. K. (2004). Epistemological understanding as a metacognitive process: Thinking aloud during online searching. *Educational Psychologist*, 39(1), 43-55.
- Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of educational research*, 67(1), 88-140.
- Ismail, H., Hassan, A., Muhamad, M., Ali, W. Z. W., & Konting, M. (2013). Epistemological Belief and Learning Approaches of Students in Higher Institutions of Learning in Malaysia. *Online Submission*, 6(1), 139-150.
- Jong, D T., & Ferguson-Hessler, M. G. (1996). Types and qualities of knowledge. *Educational psychologist*, 31(2), 105-113.
- Karkoulian, S., & Mahseredjian, J. A. (2009). Prediction of knowledge acquisition, knowledge sharing and knowledge utilization from locus of control: An empirical investigation. *Academy of Information and Management Sciences*, 13(2), 36.
- Kizilgunes B, Tekkaya, C, & Tekkaya, S, (2009). Modeling the Relations among Students' Epistemological Beliefs, Motivation, Learning Approach, and Achievement. *The Journal of Educational Research Vol. 102 No. 4*, 243-255
- Kuhn, D., Garcia-Mila, M., Zohar, A., Andersen, C., White, S. H., Klahr, D., & Carver, S. M. (1995). Strategies of knowledge acquisition. *Monographs of the society for research in child development*, i-157.
- Kyndt, E., Raes, E., Dochy, F., & Janssens, E. (2012). Approaches to learning at work: Investigating work motivation, perceived

- workload, and choice independence. *Journal of Career Development*, 0894845312450776.
- Marton, F. & Saljo, R. (1976). On qualitative differences in learning-I: Outcome and Process. *British Journal of Educational Psychology*, 46, 4-11.
- Mohamed, M. T., & El-Habbal, M. (2013). The Relationship between Epistemic Beliefs and Academic Performance: Are Better Students always More Mature?. *Journal of Educational and Developmental Psychology*, 3(1), p158.
- Muis, K. (2004). Personal Epistemology and Mathematics: A Critical Review and Synthesis of Research. *Review of Educational Research*, 74(3), 317-377.
- NCCE, (2010). *Curriculum implementation Framework for NCE Programmes*, National Commission for Colleges of Education, Abuja Nigeria.
- Ololube, N. P., Amaele, S., Kpolovie, P. J., Onyekwere, L. A., & Elechi, G. E. (2012). Quality higher education for improved knowledge essential for national and regional development. *International Journal of Education Economics and Development*, 3(2), 179-204.
- Pajares, F., & Schunk, D. H. (2005). The self and academic motivation: Theory and research after the cognitive revolution. *The impact of the cognitive revolution on educational psychology*, 165-198
- Perry, E., & Hower, J. (1970). Burial diagenesis in Gulf Coast pelitic sediments. *Clays and Clay Minerals*, 18(3), 165-177
- Piaget, J. (1977). *The development of thought: Equilibration of cognitive structures.* (Trans A. Rosin).
- Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications*. Prentice Hall.
- Richardson, J. T. & Lawless, C. J, (2002). Approaches to studying and perceptions of academic quality in distance education. *Higher Education*, 44(2), 257-282.
- Richardson, J. T. (2000). *Researching student learning: Approaches to studying in campus-based and distance education*. Open University Press.
- Rodriguez, L., & Cano, F. (2007). The learning approaches and epistemological beliefs of university students: a cross-sectional and longitudinal study. *Studies in Higher Education*, 32(5), 647-667.
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of educational psychology*, 82(3), 498.
- Schommer, M. (1993). Epistemological development and academic performance among secondary students. *Journal of Educational Psychology*, 85, 406-411.
- Schommer-Aikins, M. (2004). Explaining the epistemological belief system: Introducing the embedded systemic model and coordinated research approach. *Educational psychologist*, 39(1), 19-29
- Schraw, G., Bendixen, L. D., & Dunkle, M. E. (2002). Development and validation of the Epistemic Belief Inventory (EBI).
- Schunk, D. H., & Pintrich, P. R., & Meece, JL (2008). *Motivation in education: Theory, research and applications*
- Senemoglu, N. (2011). College of Education students' approaches to learning and study skills. *Egitim ve Bilim*, 36(160), 65.
- Zimmerman, B. J., & Dibenedetto, M. K. (2008). Mastery learning and assessment: Implications for students and teachers in an era of high-stakes testing. *Psychology in the Schools*, 45(3), 206-216.