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Role of Cognitive Engagement on Academic Achievement at Secondary School Level

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Abstract

The purpose of this research project was to investigate the role of cognitive engagement on academic accomplishment among students enrolled in secondary schools. The descriptive method was used in this investigation. The population of this study was made up of 29984 matric students. The sample of 400 students was chosen after employing stratified random sampling. A self-rated questionnaire, which was administered after pilot testing. The value of the instrument's Cronbach alpha coefficient came in at .91*. The researcher went door-to-door, handed out questionnaires, and then personally collected their responses. The levels of academic achievement of students were determined based on the data kept at their respective schools. To assess the nature of the connection between cognitive engagement and academic success, the researcher relied on the Pearson r correlation coefficient. After doing the research, the researchers concluded that there was a substantial positive association between control and relevance, aspiration and future goals, and academic accomplishment. No significant correlation was discovered between academic success and motivation originating from external sources. There was a substantial link between active cognitive participation and academic achievement in the aggregate.

Keywords: *Cognitive Engagement, Academic Achievement, Education, Educational Psychology*

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Introduction

According to Chapman (2003) the phrase "cognitive engagement" refers to the degree to which students take an interest in, pay attention to, and expend mental effort into learning activities by making use of cognitive strategy and prior knowledge to accomplish a task. In other words, cognitive engagement measures the extent to which students take an interest in, pay attention to, and exert mental effort into learning activities. According to the findings of the investigation that was carried out by Mason (2001) the utilization of written activities in the classroom that are centered on the provision of students with meaningful experiences can induce behavioral and cognitive changes that contribute to the development of both knowledge and skills. Fredricks, Blumenfeld, and Paris (2004) provided an explanation that demonstrated how students' cognitive engagement in making efforts to answer problems leads to gains in success, even if the response provided is erroneous. They also mentioned that the best possible outcomes for learning can be achieved if there is an opportunity for pupils to participate in educational activities. Because children learn most effectively when they are actively involved in what they are doing, this is the reason. When it comes to the continual improvement of individual students' educational experiences and the outcomes they achieve, the active participation of students is a component that cannot be overlooked. Recognizing a student's level of involvement serves the aim of recognizing the progress that a student has made towards achieving the learning outcomes associated with a unit. The purpose of this recognition is to acknowledge the progress that a student has achieved. A beneficial component of the activity is that it demonstrates to students the various ways in which they can boost their level of learning and achievement through increased participation. It is rarely effective to just deliver a mark or a grade; even if accompanied by a brief comment such as "good work" or "you need to improve," this method falls short of meeting its potential.

The level of investment that students have in their own education is a key component of what is known as cognitive engagement. There is a range of possible intensities, as well as a range of possible durations. For instance, a student can feel highly involved during one semester but not so much during the subsequent one; another student might find some sections of his or her classes enjoyable while being bored in others; and so, on and so forth. It is becoming increasingly obvious that one of the keys to overcoming challenges such as low achievement, boredom and alienation, and high dropout rates is to promote cognitive engagement. This is one of the most important keys. Students who are enthusiastic about their

coursework are not only more likely to do well on standardized examinations but also have a lower risk of dropping out of school altogether. When conditions exist in a school that encourage student participation and reduce apathy on the part of pupils, one can say that the environment and culture of the institution is one that is safe, constructive, and inventive. Research has shown that the amount of student participation drops significantly as children progress from upper elementary grades to middle school, with participation levels reaching their lowest point in high school. This pattern persists even after pupils have completed their high school education. According to the findings of several studies, by the time young people enter high school, between 40 and 60 percent of them have lost interest in activities that are important to them. According to Helen and Marks (2000) an increasing number of educators and school administrators are becoming interested in collecting data on student involvement and disengagement for the purposes of needs assessment, diagnosis, and preventative interventions. This interest is being driven by the need to better serve the educational needs of the student body. This is because there are significant repercussions connected with disengaging from the situation.

One of the components that are used to evaluate and define the quality of learning is the amount of cognitive engagement that is present. Students' cognitive engagement reflects their level of comprehension, and it enables their instructors to observe quickly how well they are doing in class. Engaging in cognitive activity is an active process that motivates both students and teachers to perform well and improve their understanding. Teachers were able to evaluate the efficacy of their practices and pinpoint areas in which they needed further professional development thanks to cognitive engagement. In addition, it sparked a discussion on teaching and learning in the classroom, and it enlightened the instructors about the difficulties faced by their pupils (Seldin, 1997). In the process of defining and evaluating the efficacy of the learning that takes place, one of the factors that is taken into consideration is the amount of cognitive engagement that is observed in the individual who is being taught. The cognitive engagement of students reflects their degree of comprehension, and it enables teachers to rapidly monitor how well students are doing in class by indicating how quickly their grades improve. Students' cognitive engagement reflects their degree of comprehension. Engaging in cognitive activity is an active process that drives both students and teachers to perform well and raise their level of comprehension. Participants in cognitive activity are active. This is true for traditional classroom settings as well as for one's own personal study space. Teachers were able to

evaluate the efficacy of their practices and determine the areas in which they required extra professional development because of the high level of cognitive engagement that occurred in their classrooms. In addition to this, it fostered a conversation about learning and teaching in the classroom, as well as informed the teachers on the specific issues that their pupils encounter (Seldin, 1997).

Control and Applicability

According to Jones, Harris, and Gilley (2014) the elements that determine the amount of time that students spend on a certain issue include the students' level of interest in the topic, the significance of the topic to the students' degree programs, and the students' perception of the difficulty of the assignment. The overarching purpose behind delegating suitable amounts of work to students is to ensure that those students will have sufficient spare time to engage in high-level educational pursuits. According to Karjalainen, Alha, and Jutila (2006) the term "student workload" refers to the amount of time that students devote to their academic pursuits, in addition to the amount of time that is allotted to them in the curriculum forms, as well as the degree of difficulty and the amount of content that needs to be learned. It also refers to the amount of time that is allotted to them in the curriculum forms. Tampakis and Vitoratos (2009) demonstrated that the amount of work that is expected of students can be influenced by a variety of factors, such as the learning environment and the level of academic performance that is anticipated, the students' approach to learning, the teaching methods, student perceptions of workload, and so on. These factors can all influence the amount of work that is expected of students. Attending classes such as lectures, tutorials, and seminars, working methodically on assigned academic work, studying on one's own in preparation for examinations, and working independently are all components of the workload of a student. According to Agolla and Ongori (2009) students are required to deal with an excessive amount of work that must be finished within a relatively short length of time.

The process of establishing one's own personal goals is viewed as being of the utmost significance in terms of having a positive feeling of general well-being and being pleased with one's life overall. This is because people are better able to see what they want their life to be like in the future when they create goals for themselves. When students contemplate what it means to lead a happy and worthwhile life, they are, in essence, thinking about the objectives and ambitions they have for the foreseeable future. Students who have a greater number of educational goals than their classmates have both a higher degree of educational

accomplishment and a higher level of motivation, according to the findings of a study that was carried out by Gutman and Akerman (2008). The study was carried out in the United States. This was the conclusion that the researchers arrived at after going through all the data that they gathered. According to the findings of a study that was carried out by Gushue, Clarke, Pantzer, and Scanlan (2006) students who are passionate about their futures have clearer visions for their educational ambitions and are more confident in their abilities to define their future educational identities. The study was carried out to determine whether students who were passionate about their futures had clearer visions for their educational aspirations. This was demonstrated by the fact that these students held a more optimistic outlook regarding their capacity to develop their educational identities in the years to come and motivation based on things from the outside.

According to the research conducted by Willms, Friesen, and Milton (2009) there are five successful teaching practices that have the potential to raise students' level of involvement in learning: (i) making learning meaningful; (ii) developing relationships; (iii) improving teaching practice in the presence of peer teachers; and (v) utilizing evaluation to improve learning and guide teaching. i) Creating Thoughtful, Intentional Designs for Learning. (ii) Making Learning Meaningful. (iii) developing Relationships. According to the research conducted by Willms, Friesen, and Milton (2009) there are five successful teaching practices that promise to 2009 saw the publication of the results of the investigation that had been carried out by Willms, Friesen, and Milton. If students are given the opportunity to "co-create assessment criteria with their teachers, they figure out the criteria of powerful work, and they are able to use the criteria to guide their own learning, both in school and beyond," then those students will have a greater chance of producing work that satisfies the criteria of powerful work. Both the use of formative assessment practices to monitor student progress and the involvement in regular sharing conversations with students about how they are learning are necessary components of assessment for learning. If assessment is to serve the purpose of learning, then both components must be present. For instructors to successfully complete the requirements of assessment for learning, it is necessary for them to engage in both of these practices. It has been demonstrated time and time again that including assessment into learning activities motivates students to participate more. It lays a much greater emphasis on "learning for further development" as opposed to "marking to standard expectations" or achieving accountability criteria that are imposed from the outside.

Because of standardized testing, teachers typically teach to the test rather than catering to the requirements, interests, and talents of the students in their classrooms. This is because it is easier for teachers to teach to the test than to cater to the individual needs of each student. Standardized testing has the extra effect of relieving students of their responsibility and accountability, which is a potential side effect that could lead to students losing interest in their education (Armstrong, 2006). Standardized testing also has the additional effect of relieving students of their responsibility and accountability. The idea of motivation in the realm of education is intricately intertwined with the concepts of wants and objectives. These ideas aim to pique students' interest in learning and motivate them to take part in certain activities with the end goal of accomplishing a variety of objectives. Students that are motivated on an intrinsic level acquire a high zest for learning without the need for reinforcement or rewards from outside sources, as the findings of Lei (2010) show. Students who are motivated extrinsically, on the other hand, are only focused on the successful completion of desirable outcomes and the acquisition of rewards to sustain their interest and effort in their studies. Examples of extrinsic motivational forces include the ideas of acknowledgment, competition, conformity, and the avoidance of labour. As stated by Celikoz (2010) extrinsic motivation as well as the opinions of both students and teachers has proved to be useful in fostering active learning.

Statement of the Problem

The degree of cognitive engagement that students have with the subject matter can be considered one of the multiple elements that can be used to quantify and reflect the quality of learning. This is only one of the many factors that can be used. The cognitive engagement of students reflects their degree of comprehension, and it enables teachers to rapidly monitor how well students are doing in class by indicating how quickly their grades improve. Students' cognitive engagement reflects their degree of comprehension. Cognitive engagement that is dynamic is that which enables students to perform better by developing their grasp of the topics that are being studied and is dynamic which helps students to perform better by improving their understanding of the topics that are being studied. The fact that a student's test scores improve when they are cognitively engaged is proof that the pupils are enthusiastic about the content that is being presented to them in class. The focus of this investigation was on what the researchers termed the "role of cognitive engagement on academic achievement."

Objective of the study

This study has the following objective.

1. To find out the role of cognitive engagement on academic achievement of secondary school students.

Hypotheses

H01: Cognitive engagement plays no significant effect in the academic success of secondary school students.
H02: Control and relevance as a component of secondary school pupils' cognitive engagement and academic progress are lacking.
H03: there is no significant positive relationship between aspiration and future goals as construct of cognitive engagement and academic achievement.

Significance of the Study

The level of cognitive engagement that students have with the subject matter is one of the variables that can be used to assess and reflect the quality of learning. This is one of the variables that may be employed. The cognitive engagement of students reflects their degree of comprehension, and it enables teachers to rapidly monitor how well students are doing in class by indicating how quickly their grades improve. Students' cognitive engagement reflects their degree of comprehension. Cognitive engagement is a dynamic process that motivates students as well as teachers to attain great academic performance and learn more. The following is a list of the consequences that may arise because of this research:

1. It is likely that the findings of this study will offer teachers practical evidence that they can use to their advantage because of the findings of this investigation.
2. It is quite likely that the findings of this research will give students empirical information that will be of use to them. 3.
3. It's possible that those who hold positions of control inside government agencies will find the conclusions of this study to be enlightening.

Methods and Procedure

The inquiry was of a descriptive nature, and the survey methodology was utilized in order to acquire the necessary data in order to proceed with the investigation. The primary information came from the respondents themselves, who were each questioned in a separate interview. These

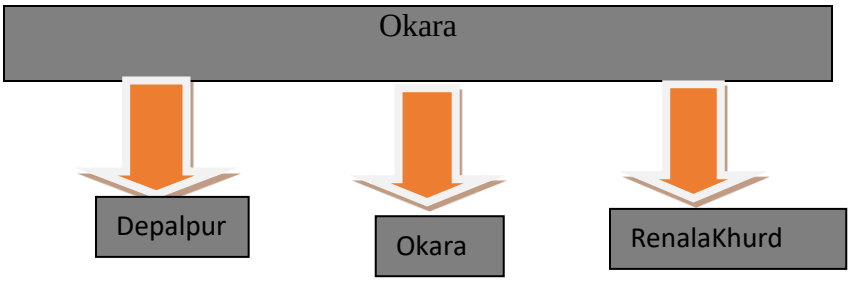
interviews were conducted individually.

Population

All students (male and female=29984) attending public secondary schools in the Okara area participated as population of this research study.

Sample

Under the direction of Gay (1996, page 125) who stated that "the sample of 400 is sufficient for population more than 5000," the sample size for the study was established. As a result, four hundred students participated in the Stratified Random sampling technique. The following diagram provides a detailed explanation of the technique for selecting samples:



Development of Research Instrument

The researchers in charge of carrying out this study came up with an instrument for research that allowed participants to grade themselves on their own levels of cognitive participation in the investigation. This evaluation tool makes use of a Likert scale that contains five points, with Strongly Agreed receiving 5, Agreed receiving 4, Undecided receiving 3, and disagreed receiving 2 as the possible replies. The following is a list of the three aspects of cognitive engagement that this specific instrument was able to measure, and they are as follows: a) administration of the situation and its relation to the amount of work to be done b) long-term aims and aspirations, and c) incentives provided by the greater global society. This study instrument, which includes a total of 18 questions, is used to evaluate an individual's level of cognitive engagement in the topic at hand.

The researcher collected the data of the students under sample of study by documenting the results of the tests that the students had completed during the first term for the purpose of gauging the academic accomplishment of the students. The researcher’s goal was to determine how successful the students were in their academic endeavors. The researcher made a record of the grades that students achieved on the first-term examinations that were administered at their separate schools. The first part of the school year began with the administration of these

examinations. This information was immediately accessible in the students' school records, which were scrupulously preserved, and it highlighted the kids' academic triumphs in addition to their academic performance over a set period. The records were kept for the students until they graduated high school. The records were kept for the duration of the pupils' complete educational experiences.

Validation of research Instrument

This research instrument was put through its pace by professionals from the disciplines of education and research to determine its reliability and validity. The final form of this study instrument was significantly shaped by the feedback that was gathered from these experts working in the education business.

Pilot Testing

Following the expert's validation of the research instrument, the researcher collected data on the research instrument from a total of 37 students who were not a part of the sample. The data were entered into SPSS by the researcher, who then determined the value of the Cronbach alpha coefficient. Since the value of the Cronbach alpha coefficient was 0.911. This research instrument can be considered reliable because it has a Cronbach alpha coefficient value that is greater than 0.70.

Data Collection

After the conclusion of the preliminary testing, the researcher went out into the general population to directly collect the data. The student participants were given the questionnaire to fill out, and they were directed through the process by the researcher who had given them the questionnaire. After completing the first questionnaire, the researcher gave the students a second questionnaire to complete and then returned the first questionnaire to them.

For researchers to collect information regarding the academic performance of pupils, they asked for the help of the teachers who taught those children. As a record of students' academic progress is kept in their schools' School Result Registers, researchers required assistance to access this information. These registers were always kept in excellent shape in the public schools where they were used. The researcher took the academic accomplishments of the students and recorded them based on the information found in these registers. The researcher distributed the questionnaire to the population sample that was being studied and then gathered the replies that were given by those individuals. Four hundred out of four hundred students who were asked to participate in the survey responded to the questionnaire.

Table 1
Cognitive engagement plays no significant effect in the academic success of secondary school students. (N=400)

		Academic Achievement
Cognitive Engagement	Pearson Correlation	.114*
	Sig. (2-tailed)	.022
	N	400

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

Table 1 presents the relationship between cognitive engagement and academic achievement by using correlation coefficient Pearson r. the results showed that there is a significant positive relationship between cognitive engagement and academic achievement as r=0.114, p=0.022 ($p<0.05$).$H_0$1 null hypothesis was rejected.

Table 2
Control and relevance as a component of secondary school pupils' cognitive engagement and academic progress are lacking. (N=400)

		Academic Achievement
Control and Relevance	Pearson Correlation	.115*
	Sig. (2-tailed)	.021
	N	400

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

Table 2 present the Relationship between Control and Relevance as construct of cognitive engagement and academic achievement by using correlation coefficient Pearson r. the results showed that there is a significant positive relationship between Control and Relevance as construct of cognitive engagement and academic achievement as r=0.115, p=0.021 ($p<0.05$). $H_0$2 null hypothesis was rejected.

Table 3
Relationship between Aspiration and Future Goals as construct of cognitive engagement and academic achievement. (N=400)

		Academic Achievement
Aspiration and Future Goals	Pearson Correlation	.110*
	Sig. (2-tailed)	.027
	N	400

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

Table 3 presents the relationship between aspiration and future goals as construct of cognitive engagement and academic achievement by using

correlation coefficient Pearson r. The results showed that there is a significant positive relationship between aspiration and future goals as construct of cognitive engagement and academic achievement as r=0.110, p=0.027 ($p<0.05$). $H_0$3 null hypothesis was rejected.

Findings and Discussions

Following findings are revealed:

2. Cognitive engagement plays no significant effect in the academic success of secondary school students shown (r=0.114) at significant level 0.05. (Table 1)

3. Control and relevance as a component of secondary school pupils' cognitive engagement and academic progress are lacking showed significant positive relationship with academic achievement (r=0.115) at significant level 0.05. (Table 2)

4. As a construct of secondary school students' cognitive engagement and academic achievement, aspiration and future objectives do not play a substantial influence showed significant positive relationship with academic achievement (r=0.110) at significant level 0.05. (Table 3)

Findings of this study are consistent with other studies. In this regard, Willms, Friesen, and Milton (2009) opined that cognitive engagement can be enhanced by five successful teaching practices that have the potential to raise students' level of involvement in learning. Some other work by Tampakis and Vitoratos (2009) demonstrated that cognitive engagement of students can be influenced by a variety of factors, such as the learning environment and the level of academic performance that is anticipated, the students' approach to learning, the teaching methods, student perceptions of workload, and so on. These factors can all influence the amount of work that is expected of students. Attending classes such as lectures, tutorials, and seminars, working methodically on assigned academic work, studying on one's own in preparation for examinations, and working independently are all components of the workload of a student. According to Agolla and Ongori (2009) students are required to deal with an excessive amount of work that must be finished within a relatively short length of time to enhance their cognitive engagement and improve learning achievement.

Conclusions and Recommendations

Followings conclusions have been drawn from the findings.

1. It is evident that cognitive engagement showed a strong effect on academic achievement. This indicated that students who were actively engaged cognitively showed better results.
2. It is evident that control and relevance as a component of secondary school pupils' cognitive engagement and academic progress showed strong effect on academic achievement. This was indicated that students` who were controlled and relatively engaged cognitively show better results.
3. As a construct of secondary school students' cognitive engagement and academic achievement, aspiration and future objectives showed strong effect on academic achievement. This was indicated that students` who have future goals and aspired cognitively show better results.

It is recommended that to enhance cognitive engagement of students, different teaching strategies may be used by teachers. Teachers may use different teaching styles to boost control of students over the content.

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