



# Correlation between Food Provision, Teachers' Involvement and Pupils' Engagement in Learning: A Case of Primary Schools in Arusha City, Tanzania

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**Abstract:** *This study sought to establish the relationship between food provision, teachers' involvement and pupils' engagement in learning using descriptive-correlational design. A sample of 217 pupils from 14 public primary schools in Arusha City filled the questionnaire. Content validity was ensured through expert judgment and reliability test yielded the Cronbach's Alpha of above 0.7 before data collection. Ethical standards were ensured through anonymity, confidentiality, avoidance of plagiarism and voluntary participation. The study established a significant positive relationship between the quality of food provision and pupils' engagement, between the quality of food provision and teachers' involvement and between teachers' involvement and pupils' engagement in learning. Pupils were actively engaged through giving contributions, critical thinking, peer interaction and group discussions. They were satisfied with the quality of food provision in their schools. While teachers were approachable and gave support to learners, female pupils considered teachers to be more involved in helping them than their male pupils' counterparts. Therefore, it is recommended that the effectiveness of food provision in primary schools should be maintained to raise teachers' involvement and pupils' engagement. Teachers need to take advantage of the active participation of the pupils as this behavior increases learning effectiveness.*

**Key words:** Food Provision, pupil, engagement, teacher, involvement, interaction, primary school

## 1. Introduction

Maximized engagement in learning is of great concern to teachers, learners and educational administrators. In finding out how engagement benefits learning and the relationship between the content, the learners and the teachers, Zepke (2019) indicates that while students are responsible for their learning, the teachers' role is essential in enhancing engagement of the learners. According to Morgan, Martin, Howard and Mihalek (2014) in Starmer, Duquette and Howard (2015, p. 134) while "learning is an active process in making sense of what has been taught, active participation involves more than just listening. It refers to when *learners* read, write, discuss, create or get engaged in solving problems." Therefore, effectiveness in the teaching-learning process involves two parts: the teachers and the learners. Unless each of these parts plays their roles

effectively, maximized learning, which is the expected end result of the teaching-learning transaction, may not be fully realized. Therefore, teachers' involvement and students' engagement are highly needed for effective learning to take place.

Studies have indicated that active participation is a key determining factor for learning effectiveness. According to Bergmark and Westman (2018), for instance, while participation is the situation whereby learners are actively engaged in classroom activities, the degree of participation is dependent on the intensity of learners' and teachers' interaction. They further maintain that "student participation has an inherent value beyond benefitting measurable outcomes, where democratic values, engagement and learning for the future profession are promoted" (p. 1352). The extent to which teachers get involved in helping learners to achieve their goals is, therefore, a determining factor for learners' engagement.

The essence of learners' engagement in the teaching-learning transaction is further brought to view by Starmer, Duquette and Howard (2015) whose study on participation strategies and learners' performance revealed that those learners who participated fully in the teaching and learning sessions scored higher on average than those with limited participation. Although in their study there was no significant difference between the two groups when assessing performance in general, it was evidenced that learners who participated fully scored higher on the short answer questions. They further established that full participation in the course was related to higher examination scores in examination questions that assessed higher levels in the cognitive domain. While engagement in the teaching-learning process is important for learning effectiveness, the essence of the teacher's involvement to boost learners' participation cannot be overemphasized.

Apart from teachers' involvement, learners' basic needs must be met for maximized engagement to take place. This is indicated by Maslow's needs theory which holds that human beings have a wide range of needs that are arranged hierarchically in five levels based on importance (McLeod, 2018; McShane & Glinow, 2010; Jerome (2013). According to Tuckman and Monetti (2011), needs and goals are powerful motivators influencing both the target of behavior and the driving force behind it. They also cite Wigfield and Eccles (2002) who have it that "need and goal approaches focus on explaining the motivation of students to achieve, as reflected in the tasks they choose and the energy they invest in doing them based on the needs satisfied and goals met by this behavior" (p. 416). The first level of needs includes physiological or biological needs. These are needs that come first because they are necessary for survival. Examples include food, water and air. Unless learners are provided with quality food services, they may not be prepared to meet higher needs.

After satisfying physiological needs, the next level includes safety needs which are important for human protection. Human beings need to be protected from danger and threatening environments. Therefore, teachers need to play a significant role in protecting learners from potential harms and dangers. They need to create a conducive and user-friendly atmosphere for learners to enjoy and feel in safe hands as the teaching and learning process takes place. According to Nzowa and Ngussa (2019), competency is positively influenced by classroom infrastructure and effective teachers' support. The

more the teachers give support, the more the learners are motivated to engage and support one another in the process of teaching and learning, thus, the likelihood for the maximized interaction and consequently effective learning. The next level is composed of social or belonging needs whereby human beings desire to be loved and socially accepted by peers and colleagues. In this way, teachers need to ensure a cordial relationship among learners for them to enjoy working together in groups to meet their objectives. Therefore, teachers' interaction with learners is of great importance to guarantee the rate of learners' engagement.

Next to belonging needs are esteem needs which are related to self-respect and desire to be respected, recognized and appreciated by others. The teachers, therefore, need to recognize learners as intelligent persons with abilities to construct knowledge under the influence of the teachers. Thus, teachers must take the role of mentorship while the learners are guided to build knowledge-based on previously learned experience.

The last and highest level of needs constitutes self-actualization in which human beings aspire to realize their potential, self-development and creativity (Mosley, Mosley & Pietri, 2015). This theory is useful in explaining the influence of the school feeding program in an attempt for learners to meet their most basic needs, which will pave the way toward the accomplishment of higher needs. As asserted by the theory, food constitutes basic human needs and its availability is a prerequisite for active teaching and learning. In favor of this view, Levinger (2005) has it that school feeding programs can help to improve students' attendance, enrollment and active learning capacity. De Muro and Burchi (2007) further add that food provision is important for effective learning because undernourishment can undermine learning capabilities among children. Therefore, the provision of food and teachers' involvement in helping learners reach their potentials are essential attributes that can positively influence the rate of learners' engagement in the learning process.

This study, therefore, addressed issues related to interrelationships between food provision, teachers' involvement and pupils' engagement in learning. Particularly, it sought to come up with answers to the following research questions: (1) What is the rate of engagement in learning by primary School pupils in Arusha City? (2) What is the perception of learners on the quality of food provision in Primary Schools of Arusha City? (3) What is the rate of teachers'

involvement in the teaching-learning process in Primary Schools of Arusha City? (4) Is there a significant difference in the rate of teachers' involvement as perceived by pupils categorized according to gender? (5) Is there a significant relationship between teachers' involvement, quality of food provision and pupils' engagement in learning?

## **2. Literature Review**

In this section, researchers went through previous studies and literature related to key variables of the study namely teachers' involvement, quality of food provision and learners' engagement.

### **2.1 Engagement and Teachers' Involvement**

Engagement in learning is considered by Willis (2003) as the extent to which learners identify with and actively participate in academic and non-academic school activities. It is that sense of belonging at school and acceptance of school values and a behavioral component. Wright and Angelini (2012) advocate for a situation whereby learners are given chances to take active roles in the teaching and learning process. This can be accomplished by a situation where learners are given the opportunity to assume the role of mentor in the process of teaching and learning, under the guidance of the teachers. This experience enables learners to develop abilities to critically reflect on their skills, knowledge and approaches to learning. Consequently, through increased awareness of their learning conceptions and critical evaluation of their strengths and weaknesses, learners who take the mentorship role are likely to develop new methods to accelerate their academic and personal development. The act of mentoring other learners enables mentoring learners to develop a more critical self-concept, which is essential for learning effectiveness. Therefore, it is advised that teachers' role should be that of facilitating the learning process while the learners take active roles in their attempt to learn.

The essence of learners' engagement in the teaching and learning process is centered on the constructivism theory which holds that knowledge is constructed by learners through active participation under the guidance of the teacher (Ngussa and Ndiku, 2014). Constructivism emphasizes that teachers should not teach traditionally, but should encourage students to cooperate or interact with peers. Learners should process information and construct the meaning of knowledge actively, rather than listening to teachers passively (Huang, Spector & Yang (2019). The role of the teacher is to motivate

learners to take various roles in the teaching and learning process. Active participation has been proved by researchers to yield positive outcomes in the learning process. Using a sample of 1338 elementary school learners in America, Finn and Cox (1992, p.141), for instance, researched on trends of children in three groups: active participants, passive participants and non-participants and came up with a conclusion that the participating groups were distinct in terms of school attendance, achievement and self-concept. This led them to derive the fact that engagement in an elementary school classroom is essential for effective learning to occur, while maintaining that non-engagement can initiate a cycle that culminates in total withdrawal.

According to Willis (2003), engagement is a predictor of academic achievement in that being disengaged causes poor academic achievement and low achievement causes withdrawal from school. Therefore, engagement and academic achievement go hand-in-hand. Aldamen, Duncan and Ziegelmayr (2018) bring to view the essence of sustainable engagement in the process of learning. Particularly, while their study findings established that additional engagement in assignments has no significant impact on mid-semester examination performance, sustained engagement throughout the semester had a cumulative impact on final examination performance. While students who performed well on mid-semester examinations did not benefit from additional engagement, those students who performed poorly in the mid-semester examinations exhibited higher final examination scores from sustained engagement. Therefore, learners' engagement can be a crucial strategy teachers can use to encourage learners to have a sense of belonging to the school and in that way build a learning culture that can be sustained in their long educational journey.

According to Willis (2019), the presence of teachers is essential to guarantee learners active participation in the teaching and learning process. The rate of learners' participation can be guaranteed when the teacher assumes the role of facilitator while the learner experiences appropriate learning environment as follows: First, provision of a topic in advance whereby learners are given the topic earlier in advance to think about how they will participate during class time. Secondly, the ideal arrangement of the classroom whereby the sitting arrangement must guarantee visibility so that learners can see one another for easier interaction during classroom sessions. Thirdly, the provision of learners with a

chance to speak without any interruption. Here, the teacher has to overcome the temptation to interrupt learners unless it is essential to do so. Next, teachers' clarification whereby the teacher repeats learners' responses to ensure that their peers get the message very clearly from fellow learners. Lastly, the teacher needs to give more emphasis to the ideas presented by the learners.

## **2.2 Provision of Food and Learners' Engagement**

While there are many factors which can influence pupils' engagement in learning, effective provision of food is an important requirement to be considered in schools. Studies have indicated that the effective provision of food enhances the engagement of learners in the teaching and learning process. The study of Ngussa and Mbifile (2016), for instance, which investigated on the influence of food provision on pupils' participation in learning across 130 Primary Schools in Babati Rural District, revealed that pupils in schools that offered meals had significantly higher mean score in learning participation than pupils in schools which did not offer meals. Therefore, the rate of engagement is significantly influenced by the provision of food in schools.

Influence of food provision on pupils' engagement in learning is further advocated by Muiru, Thinguri, Njagi and Kiarie (2014) who conducted a study on malnutrition and its impact on school attendance in Kenya and established that malnutrition affected learning due to increased infections, diminished cognitive ability and low school attendance rate. Due to increased awareness of the importance of food provision in schools, the World Food Program and other development partners have reported a rise in nations' claims for, and interest in school feeding (Bundy et al., 2009). While schools in nations under high and upper-middle-income have access to food for all children, those nations under-middle and low-income, have limited or no access to food provision in schools (Yendaw & Dayour, 2015). This suggests a problem that calls for further investigation on the quality of food provision in schools in developing countries such as Tanzania and its effect on primary school learners' engagement.

While some studies have revealed that school feeding gives pupils good health, energy and abilities for participation, thus enhancing the academic performance, other studies have indicated that school feeding program stimulates school enrolment and enhances attendance, completion rates and academic performance (Taylor and Ogbogu, 2016). School

Feeding Program further helps to prevent malnutrition disorders thus improving nutrition status and enhancing the learning abilities of school children (Yunusa, 2012). According to the World Food Program (2017), meal provision influences the children to stay in the classroom which in turn contributes to increased academic performance. In other words, food acts as a magnet to attract learners into the classroom. Supplying daily meals to children further, helps them to be in school and thus to achieve their educational goals. A balanced diet provides nutrients to children, which helps them to grow well physically and mentally and ensures participation in the classroom activities thus enhancing their performance.

As noted by Dei (2014), the school feeding program plays a great role in increasing enrolment, attendance and cognitive development. Moreover, Mwavula (2014) supports this idea by noting that the school feeding program is a key factor for influencing increased enrolment and attendance of pupils in primary school as well as active participation which results in a minimized drop-outs rate and good performance. Similarly, Nyakundi (2017) comments that school feeding programs influence pupils' retention in schools, motivates parents to enroll their children, increases attendance and improves performance. Besides, the study findings of Sanya (2015) in Tanzania revealed that the school feeding program is an effective means of stimulating school attendance among pupils. Chaula (2015) further states that school feeding brings about a positive effect on pupils' school attendance by attracting them to attend school regularly. Even though the access to education is progressively expanding across developing countries, there are several hurdles like poverty and hunger that still cause school drop-out to about 67 million of primary school children, where about 43% of whom are in sub-Saharan Africa (Taylor & Ogbogu, 2016 & Nyakundi, 2017). As time goes, the number of out of school children has increased in sub-Sahara Africa, from about 29 to 31 million from 2008 to 2010. This trend is alarming and perhaps has been caused by a lack of food provision in some schools, thus a serious need to conduct studies related to food provision and pupils' learning factors.

## **3. Research Methodology**

This section presents the research methodology employed in this study. Particularly, it addresses the design used, population and sampling, validity and reliability and ethical considerations.

### 3.1 Research Design

The study applied descriptive-correlational research design under a quantitative research approach. Descriptive design is one that describes the situation, characteristics or behavior of the phenomena. Descriptive statistics form the basis for inferential statistics. It is used to derive rich data and generate new knowledge. Besides, the correlation aspect refers to the approach that measures the relationship between variables (Newman, 2006). In this study, the correlational analysis determined the relationship among variables under investigation.

### 3.2 Population and Sampling

The population is a common set of elements, be it objects or persons with common characteristics (Newman, 2006). While there are 48 public primary schools in Arusha City, a total of 14 schools (30%) were randomly selected to be used for investigation through systematic sampling. This was accomplished by listing the 48 schools and randomly selecting one after every three. In choosing respondents from selected schools, the study employed simple random sampling whereby the research assistant distributed questionnaires randomly to potential respondents who were willing to participate to enable the possibility to give each member of the population an equal chance of being selected to participate (Newman, 2006). A total of 207 pupils were used as a sample to fill the questionnaire.

### 3.3 Validity and Reliability

Validity refers to the ability of the research instrument to measure what it intends to test. It shows the degree to which the inquiry findings are truthful. Validity is compulsory to all disciplines of inquiry. While there are different approaches to validity, content validity is the extent to which the research instrument contains all possible questions necessary to achieve the objectives of the study (Mohajan, 2017). Hence, in this study, the threat to content validity was addressed by using expert judgment whereby the questionnaire was distributed to five experts from the University of Arusha to review and determine whether it matches the research questions that guided the study. The experts gave suggestions which were used to improve the questionnaire before it was used for data collection in the field.

Reliability, on the other hand, refers to the consistency of the findings based on the study conducted at different intervals using a similar instrument (Newman, 2006). The study ensured reliability by conducting a pilot study with 40

respondents at a primary school which was not part of the sample to test the Cronbach's Alpha.

Table 1: Reliability Results for the Questionnaire

SN	Name of Variable	Items	C. Alpha
1.	Teachers' Involvement	8	.720
2.	Quality of Food	5	.762
3.	Pupils' Engagement	8	.799

A Cronbach's Alpha of 0.7 was set as a minimal requirement. As observed in Table 1, Cronbach's Alpha for teachers' involvement was .720, for the quality of food provided was .762 while for engagement in learning was .799. Therefore, the instrument was reliable for data collection.

### 3.4 Ethical Considerations

Ethics is the ability to differentiate acceptable behavior and non-acceptable behavior. In this study, ethical standards were ensured through maintaining respondents' anonymity and confidentiality, avoidance of plagiarism and opening ways for voluntary participation of respondents. While confidentiality was ensured through non-disclosure of confidential information collected from respondents, anonymity was maintained by not requiring the respondents to fill their personal information in the questionnaire. Regarding voluntary participation, only pupils who were willing to participate in the study were randomly given questionnaires to fill. Concerning the avoidance of plagiarism, the paper was tested to ensure minimal similarity with previous studies. Lastly, a study permit was sought from government authorities before data collection.

## 4. Analysis and Results

Analysis of data followed the five research questions that guided the study. Each research question had corresponding items in the questionnaire, which was the major instrument for data collection. The analysis of the data was divided into two major sections. The first section dealt with descriptive statistics while the second dealt with testing of a hypothesis.

### 4.1 Descriptive Analysis

It was necessary to determine the perception of respondents in various aspects. Respondents were required to tick most appropriate options in the questionnaire optional responses ranged from 4- strongly agree, 3- agree, 2- disagree and 1- strongly disagree and scale of mean score interpretation was as follows: 3.50-4.00 = strongly agree, 2.50-3.49= agree, 1.50-2.49 = disagree and 1.00-1.49 = strongly disagree.

**1. What is the rate of engagement in learning by primary School pupils in Arusha City?**

This research question sought to establish the rate of engagement in learning by pupils in public primary schools of Arusha City. As table 2 indicates, the mean score for the first five items ranged between 3.50 and 4.00 which means strong agreement. Therefore, pupils strongly agreed that they contributed ideas during learning sessions, lessons delivered propelled their critical thinking, they participated in extra-curricular activities, there is peer interaction in classrooms and they answered

questions posed by teachers. While the mean score for the last three items ranged between 2.50 and 3.49, pupils further consented that they asked questions during class times, there was a collaborative learning environment and they actually engaged and participated in group works. It is quite impressive to note the engagement and participation of the learners in the teaching and learning process. According to Bergmark and Westman (2018, p. 1352), “participation has an inherent value beyond benefitting measurable outcomes, where democratic values, engagement and learning for the future profession are promoted”.

**Table 2: Descriptive Statistics for Pupils’ Engagement**

SN	Item in the Questionnaire	Mean	Std. Deviation	Interpretation
1.	I contribute ideas during learning sessions	3.82	.37995	Strongly Agree
2.	Lessons delivered propels critical thinking	3.79	.41500	Strongly Agree
3.	I participate in extra-curricular activities	3.78	.58921	Strongly Agree
4.	There is peer interaction in the classroom	3.72	.90737	Strongly Agree
5.	I answer questions posed by teachers in class	3.71	.99223	Strongly Agree
6.	I ask questions during lesson time	3.40	.63058	Agree
7.	There is a collaborative learning environment	3.25	.66441	Agree
8.	I participate in group work	3.19	.86709	Agree

This suggests that the established rate of engagement in the learning process prepares the learners to be committed in their future careers. While the findings of Finn and Cox (1992) established that participating groups are likely to experience regular school attendance, academic achievement and self-concept, this is an added advantage for learners in Arusha City primary schools to practice regular attendance and consequently finish their education with higher academic achievements which will enable them to set a strong foundation in higher education.

**2. What is the perception of pupils on the quality of food provided in their schools?**

This research question sought to establish the perception of learners toward the quality of food at their particular schools. As table 3 indicates, the mean score for all items ranged between 3.50 and 4.00 denoting strong agreement. Particularly, pupils strongly agreed that the amount of food provided is

sufficient, the food is prepared in a clean environment and it is a balanced diet, the food is delicious and in varieties. It is worth noting that children are satisfied with the food provided in their schools and this is a sign that their basic needs are met, which paves the way for maximized engagement in learning as per Maslow’s theory of needs.

This finding is reinforced by Tuckman and Monetti (2011) who believed that needs and goals are powerful motivators influencing both the target of behavior and the driving force behind it. Wigfield and Eccles (2002) in Tuckman and Monetti (2011, p. 461) further add that “need and goal approaches focus on explaining the motivation of students to achieve, as reflected in the tasks they choose and the energy they invest in doing them based on the needs satisfied and goals met by this behavior” (p. 416).

**Table 3: Descriptive Statistics for Perception of Quality of Food**

SN	Items in the Questionnaire	Mean	Std. Dev.	Interpretation
1.	Amount of food provided is sufficient	3.67	.62050	Strongly Agree
2.	The food is prepared in a clean environment	3.65	.61910	Strongly Agree
3.	The food provided is a balanced diet	3.59	.71704	Strongly Agree
4.	The food provided is delicious	3.73	.56012	Strongly Agree
5.	The school provide varieties of foods	3.74	.53692	Strongly Agree

Table 4: Descriptive Statistics for Perception of Students on Teachers' Involvement

SN	Items in the Questionnaire	Mean	Std. Dev.	Interpretation
1.	My teachers are ever ready to give support.	3.14	.63724	Agree
2.	My teachers are approachable.	3.30	.56626	Agree
3.	My teachers follow up what takes place in discussion groups	2.96	.64810	Agree
4.	My teachers are concerned with individual differences	3.15	.66002	Agree
5.	My teachers follow up on what takes place in class.	2.99	.78202	Agree
6.	My teachers know students by their names	3.23	.56458	Agree
7.	My teachers never miss a period.	3.20	.71717	Agree
8.	My teachers return quizzes on time	3.03	.88555	Agree

Table 5: Group Statistics for Teachers Involvement by Pupils' Gender

Teachers' Involvement	Gender	N	Mean	Std. Deviation	Std. Error Mean
	Male	112	3.07	.31754	.03000
	Female	95	3.20	.38738	.03974

Table 6: Independent Sample t-test for Teachers Involvement by Pupils' Gender

		Levene's Test for Equality of Variances						95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
INVOLVE MENT	Equal variances assumed	2.666	.104	-2.620	205	.009	-.12836	.04900	-.22496	-.03175
	Equal variances not assumed			-2.578	181.698	.011	-.12836	.04980	-.22662	-.03010

Food is among the most basic needs which come first because they are necessary for survival. Unless learners are provided with quality food services, they may miss the energy to fight for the next level needs which include safety needs which are important for human protection. Therefore, teachers in schools under investigation should use food provision as an added advantage in striving to make sure that their learners become successful in realizing their main goal for schooling, which is the highest academic achievement.

### 3. What is the rate of teachers' involvement in the teaching-learning process?

This research question sought to establish the rate of teachers' involvement in the teaching and learning process as perceived by pupils. As the mean scores ranged between 2.50 and 3.49, pupils agreed that their teachers are ever ready and are approachable to give support, the teachers follow up what takes place in discussion groups and are concerned with individual differences of learners. Furthermore, pupils agreed that teachers follow up on what takes place in class, they know students by names, they never miss a period and they return quizzes on time. This is quite encouraging as maximized teachers' involvement is a major prerequisite for enhanced learners' engagement during the teaching and

learning transaction. This experience may enable them to develop abilities to critically reflect on their skills, knowledge and approaches to learning. And through such increased awareness, learners will consequently develop new methods to accelerate their academic and personal development. In the long run maximized learning will be realized.

### 4.2 Hypotheses Testing

This section addressed the last two research questions about differences and relationships among variables under investigation. It specifically dealt with hypothesis testing to determine the difference and relationships among variables.

#### 4. Is there a significant difference in the rate of teachers' involvement as perceived by pupils categorized according to gender?

This research question sought to establish a difference in the rate of teachers' involvement as perceived by pupils categorized according to their genders through hypothesis testing. This was test the findings of Moses, Admiraal, and Berry (2016, p. 475) who observed that "gender might be an important factor in explaining what kinds of prospective teachers are attracted to teaching. The null hypothesis stated: *there is no significant*

*difference in the rate of teachers' involvement as perceived by pupils categorized according to gender.*

Table 7: Independent Sample t-test for Teachers Involvement by Pupils' Gender

VARIABLES		Food Provision	Pupils' Engagement	Teachers' Involvement
<b>Food Provision</b>	Pearson Correlation	1	.315**	.269**
	Sig. (2-tailed)		.000	.000
	N	207	207	207
<b>Pupils' Engagement</b>	Pearson Correlation	.315**	1	.454**
	Sig. (2-tailed)	.000		.000
	N	207	207	207
<b>Teachers' Involvement</b>	Pearson Correlation	.269**	.454**	1
	Sig. (2-tailed)	.000	.000	
	N	207	207	207

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

As seen in Table 5, the mean score for female pupils (3.20) was higher than the mean score for males (3.07) which suggests a possibility that female pupils considered the teachers more involved in helping them to learn in comparison with male pupils. The independent sample test in table 6, furthermore, yielded the Sig of .009 which is lesser than the critical value (.05), leading to rejection of the null hypothesis, maintaining that there is a significant difference in the rate of teachers' involvement as perceived by learners categorized according to gender. Particularly, female pupils considered their teachers highly involved in helping them than male pupils' counterparts. Therefore, the gender difference of the learners determined perceptions of the rate of teachers' involvement in the teaching and learning transaction.

**5. Is there a significant relationship between pupils' engagement, quality of food provision and teachers' involvement in the teaching and learning process?**

This research question called for testing of a null hypothesis which states: there is no significant relationship between pupils' engagement, quality of food provision and teachers' involvement in the teaching and learning process. The hypothesis was tested using the Pearson Product Moment Correlational Coefficient as indicated in Table 7. The strength of correlations was interpreted as follows: Greater or Equal to 0.7 = Strong Correlations; Greater or Equal to 0.5 = Moderate Correlations and 0.49 and below = Weak Correlations. Table seven further presents some positive yet weak correlations among constructs under investigation. Therefore, the null hypothesis is rejected while maintaining that there is a significant relationship between pupils' engagement, quality of food provision and teachers' involvement in the teaching and learning process.

Particularly, there is a significant relationship between the quality of food provided and pupils'

engagement in learning (Pearson Correlation=.315, Sig. =.000). The higher the quality of food provided the rates of the pupils' engagement in learning. Therefore, a better quality of food services enhances the rate of pupils' engagement in the teaching and learning process. This is supported by the findings of Ngussa and Mbifile (2016) in Babati district, Tanzania, that pupils in schools that offered meals had significantly higher mean score in learning participation than pupils in schools which did not offer meals. This led to a similar conclusion that, the rate of engagement is significantly influenced by the provision of food in schools.

Furthermore, there is a significant relationship between the quality of food provided and the rate of teachers' involvement in the teaching and learning transaction (Pearson Correlation=.269, Sig. =.000). The better the quality of food provided, the higher the rate of teachers' involvement in the teaching and learning process. Therefore, a better quality of food services enhances the rate of teachers' involvement in helping pupils to learn. The finding is similar to that of Frances, Deus and Vincent (2016) that school welfare provision positively influences teacher performance. If teachers are reciprocally committed to working and administrators meet teachers' varied needs, teachers will work hard and increase the rate of their commitment to helping the learners reach their potentials. Therefore, teachers' welfare is an important milestone in human resource management in educational institutions.

There is also a significant relationship between the rate of teachers' involvement and pupils' engagement in learning (Pearson Correlation=.454, Sig. =.000). The more the teachers are involved, the more the learners get engaged in the teaching and learning process. Therefore, teachers' involvement increases pupils' engagement in the teaching and learning process. This is supported by Willis (2019) that the presence of teachers is essential to guarantee learners active participation in the teaching and



learning process while maintaining that the rate of learners' participation can be guaranteed only when the teachers assume the role of facilitator while the learner experiences appropriate learning environment.

## 5. Conclusions and Recommendations

This section presents conclusions with corresponding recommendations to education stakeholders and policymakers regarding engagement in learning, teachers' involvement in food provision:

### 5.1 Conclusions

Based on findings and discussions, the researchers came up with the following conclusions:

First, pupils are actively engaged in learning through contribution of ideas in the teaching and the learning process, critical thinking, peer interaction in and outside the classrooms, answering questions posed by teachers and participation in collaborative learning as well as in group discussions.

Secondly, pupils are satisfied with the quality of food provided in their schools. The amount of food provided is sufficient, the food is prepared in a clean environment and it is a balanced diet, it is delicious in varied types.

Thirdly, teachers are approachable and are ever ready to give support to the learners. They follow up on what takes place in discussion groups and are concerned with individual differences of the learners. They further follow up what takes place in class, they know students by names and they return quizzes on time.

Fourthly, there is a significant difference in the rate of teachers' involvement as perceived by learners categorized according to gender. Female pupils considered their teachers to be highly involved in helping them than their male pupils' counterparts. Therefore, gender differences determined perceptions of the rate of teachers' involvement in the teaching and learning transaction.

Lastly, there is a *significant positive relationship between the quality of food provided and pupils' engagement in learning*. The better the quality of food, the higher the rates of pupils' engagement in learning. Therefore, the quality of food services enhances the rate of pupils' engagement in the teaching and learning process. There is also a *significant positive relationship between the quality*

*of food provided and the rate of teachers' involvement in the teaching and learning process*. The better the quality of food, the higher the rates of teachers' involvement in learning. Therefore, the quality of food services enhances the rate of teachers' involvement in helping pupils to learn. Lastly, there is a significant relationship between the rate of teachers' involvement and the rates of pupils' engagement in learning. The more the teachers are involved, the more the learners get engaged in the teaching and learning process. Therefore, teachers' involvement increases pupils' engagement in the teaching and learning process.

### 5.2 Recommendations

Based on the conclusions, the following recommendations are given:

First, the effectiveness of food provision in public primary schools in Arusha City should be maintained. The school administrators need to ensure a variety of food provided, and the diet should be balanced.

Secondly, teachers should take advantage of the active participation of the pupils in the teaching and learning process as this behavior increases learning effectiveness. The teachers should particularly give chances for pupils to construct the knowledge under the guidance of the teachers.

Thirdly, since the quality of food provided positively influences both pupils' engagement and teachers' involvement, school administrations should ensure effective provision of food not only to pupils but also to teachers.

Lastly, since teachers' involvement increases learners' engagement, teachers need to get motivated to proceed with active involvement in the teaching and learning process so that pupils' engagement should be sustained and as a result, effective learning should take place.

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