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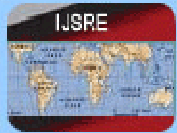
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Understanding Elementary Students' Argumentation Skills through Discrepant Event "Marbles in the Jar"

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Abstract

Teachers are increasingly faced with questions that enhance students' argumentation and critical thinking skills. The purpose of this case study is to investigate how middle school students utilize argumentation and critical thinking skills, which have an increasing popularity and importance in science education. A total of 41 8th grade students were purposefully selected. The argumentation process and abilities of forty-one eighth grade students related to a scientific problem are investigated using descriptive research method. In this study, the aim was to investigate students' argumentation and critical thinking abilities about a discrepant science problem. The problem involved two different sizes of marbles and two identical cups. The findings revealed that most students do not possess adequate levels of argumentation and critical thinking skills. Among them, teachers' comprehension and ability to apply such higher-order thinking skills were found to be the main most issue.

Keywords: Scientific argumentation, Critical thinking, Discrepant science events.

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INTRODUCTION

In the history of science education, there exist several methods of instruction believed to enhance students' science process skills such as observing, analyzing, synthesizing, experimenting, data selecting and problem solving (Padilla, 1990; Clarke, 2010). The main aim of developing instructional approaches in science teaching is to improve such skills because they are needed for real life problems that students face in the future. Originally, the discovery-learning approach by Jerome Bruner was a major influence in teaching science concepts. Beyond that, derivations, of this approach have been developed since then in science education: these include the learning cycle, discussion, inquiry, argumentation and critical thinking (Yerrick, 2000). According to the constructivist learning theory that is widely used nowadays, individuals actively configure the information, think critically and solve the problems from different angles (Kingir el al., 2011). At the problem solving and critical thinking stage, argumentation is required (Cho & Jonassen, 2002; Duschl & Osborne, 2002; Zohar & Nemet, 2002).

Argumentation has been examined extensively for decades in science education. It has been widely accepted as a fundamental pillar of science teaching (Pontecorvo & Girardet, 1993; Yerrick, 2000; Duschl & Osborne, 2002; Zohar & Nemet, 2002; Osborne et al., 2004; Erduran & Jimenez, 2007; Sadler, 2006; Duschl, 2008; Bricker & Bell, 2008; Kuhn, 2009, 2010) pointed out the importance of argumentation has been described as follows, "Argumentation is a form of discourse that needs to be appropriated by students and explicitly taught through instruction, task structuring and modeling". Moreover, early researchers (Stephen, 1958; Kuhn, 1991) described argumentation as the ability of informal reasoning to make claims and to ensure evidence in supporting these claims, in solving problems or in making decisions.

Scientific Argumentation

Stephen (1958) proposed a layout containing six interrelated components for analyzing arguments: claim, data, warrant, backing, rebuttal, and qualifier. The above steps are known as Toulmin's Argument Pattern (TAP) which is used for the analysis of arguments (Erduran et al., 2004; Pontecorvo & Girardet, 1993). This argumentation model which is primarily based on Toulmin's theory helps learners to make an argument and to support this argument with data or evidence, then to connect these data or evidence with correct and relevant sources, and finally to assess the constraints of their solutions (Erduran, et al., 2004). Already, when applied to an educational environment, the argumentation model of Toulmin encourages both teachers and students to discuss their ideas thereby verbalizing their standpoint and deciding on different ideas because of the interactivity involved (Hewson & Ogunniyi, 2011).

Essentially the basis of the scientific argumentation model, defined as the examination of different viewpoints so as to reach a shared understanding of observed phenomena, is seen as discussion by scientists and it is based on the argument which learners put forward by providing proof (Harlow & Otero, 2004; Okumus, 2012). Because proofs and justifications support students' thinking in the process of scientific debate, their arguments, which are supported with evidence, will effectively develop their argumentation skills (Okumuş, 2012). In this regard, this process is vital to the development of scientific knowledge, namely scientific argumentation in the classroom not only aids students in their acquisition of science knowledge and but also increases students' understanding of the social nature of scientific knowledge (Driver et al., 2000). To sum up, as justified by the goals of science education in [AAAS]/Project 2061 and [NRC]/1996, argumentation could be highly beneficial to students and plays a critical role in science classrooms in learning how to describe and judge scientific arguments (Bell and Bricker, 2008). Considering that teaching with argumentation differs basically from the traditional instructional approaches that still exist in many schools worldwide, argumentation mirrors scientific practice most importantly. Because ideas are proposed and contradicted in this scientific application, students find the chance to develop argumentation skills (Hewson & Ogunniyi, 2011).

Recent articles explored different ways to enhance argumentation abilities or willingness to initiate an argument in science contents. Sampson and his friends (2010) aimed to increase students' participation in scientific argumentation and the quality of the scientific arguments. The authors utilized a series of laboratory activities designed using an instructional model Argument-Driven Inquiry (ADI) and investigated its influences. Nineteen 10th grade students were selected for that purpose. The participants were engaged in 15 different laboratory experiments in groups. The results of their study revealed that the students had better engagement and produced better arguments after the intervention.

In a similar study, researchers (Ryu & Sandoval, 2012) assessed whether an instructional model could improve children's understandings and applications of epistemic criteria for argumentation. The study took place in a class with 3rd/4th grade students. Students' ages ranged between 8 and 10. The researchers designed a "science time" corner during a regular academic year curriculum. In conclusion, students achieved an understanding of argumentation and the ability not only to construct but also to evaluate scientific arguments. The above-mentioned experimental studies focus on improving students' argumentation skills or their ability to evaluate arguments. Some other studies in the literature aim to enhance such skills.

Critical Thinking Skills in Science

Because of more information being available in the current century, the science and education environment is experiencing the era of technology and information is subject to rapid change. Goh (2008) states that according to educators', knowledge may become outdated more quickly than in the past. Due to this statement, the development of knowledge acquisition skills is required. This development equips student with the opportunity to acquire knowledge that may not exist now and to solve problems they have not encountered before (Pithers & Soden, 2000). Dealing with the sudden changes also requires students to engage in active critical thinking processes including higher-order thinking (Halpern, 1999).

Because the argumentation not only becomes the focal point of critical thinking (Ingram, 2008) but also the realization of critical thinking processes, it is of the utmost importance that primarily the concept of critical thinking should be understood fully. Since 1900, many definitions have been made of critical thinking in different disciplines. First, as cited in German (2008), according to Meyers (1986), John Dewey defined the term critical thinking in 1910 as suspended judgment involving active, persistent and careful consideration of any belief or supposed form of knowledge in light of the evidence (German, 2008). Later, Dewey (1916) described the essence of critical thinking as suspended judgment to determine the nature of the problem before trying to solve it and suggested that analysis and synthesis of the problem were necessary components of critical thinking (Becker, 2007). According to Paul's (1990) definition, critical thinking is disciplined, self-directed thinking appropriate to a particular mode or domain of thought. In the late 1990s, the Delphi Project, which was conducted as two-year multi-faceted research project, devised a definition of critical thinking, which was intended for instruction and educational assessment (Burns, 2009). Facione in Derwin (2008) suggested that the Delphi report lists six skills related to critical thinking, which are interpretation, analysis, evaluation, inference, explanation, and self-regulation. In a Delphi study conducted by the American Philosophical Association (APA) critical thinking was described as the process of purposeful, self-regulatory judgment and an interactive, reflective reasoning process (Becker, 2007). Moreover, Halpern (1999) also described critical thinking as purposeful and logical, and aimed at the use of cognitive skills and strategies. He stated that critical thinking is related to our thought processes of how good a decision is or how well a problem is solved (Halpern, 1999).

The consensus that emerges from this and similar definitions is that critical thinking is not only a contextual or subject related skill, but also extends beyond a set of skills (Byrne & Johnstone, 1987; Ingram, 2008). In this process, thinking critically requires knowledge and an understanding of the content, skills and processes of the subjects under consideration (Byrne and Johnstone, 1987). Also in this connection, critical thinking involves going through certain processes, for example, analyzing the issue, gathering, evaluating the data and synthesizing the information (Bailin, 2002). To Ingram (2008), critical thinking is a reflective

process, from which the outcome may be more thinking, and involves the application of the above-mentioned skills in a logical and rational manner.

Developing critical thinking is one of the goals of science education. For example, the National Science Education Standards (1996) include critical thinking among their numerous topics (Bailin, 2002). As it is, science education has the potential for improving students' critical-thinking skill because of the nature of science. Namely, science gives the critical thinker the opportunity to make discoveries, which are pure science, and to make practical use of new knowledge, which is applied science (Alexander, 2004). Given the Next Generation Science Standards, it is important to understand by assimilating that the scientific practices include the critical thinking skills. Three active learning strategies are proposed as supportive mechanisms to enhance student critical thinking: small-group learning with authentic tasks, scaffolding, and individual writing (Kim et al., 2012). "Here we need to heighten students' awareness of and practice in these strategies" (Paul, 1990). According to Van Erp (2008), though it is difficult to foster critical thinking skills, it is not impossible.

The recent literature suggests that critical thinking skills can be developed if educators facilitate processes requiring students' experience and inquiry and test their ways of thinking (Erduran & Jimenez, 2007; Sadler, 2006; Osborne et al., 2004). In this process, though encouraging educators to utilize strategies promoting critical thinking skills is a rigid step, this issue needs to be considered more globally as well and, most importantly, critical thinking itself should be the mission of an educational institution (Van Erp, 2008). However, obstacles still exist in the teaching of critical thinking though standards mandate instruction in higher-order thinking (Thurman, 2009). Studies in the literature indicate that the lack of instruction for teachers in regard to critical thinking is a problem if they are expected to teach the skills with any degree of proficiency (Burns, 2009). In the same way, few introductory science courses provide students with learning environments where they engage in tasks which encourage their critical thinking skills (McConnell, 2005). As cited in Burns (2009), Moreno (1999) asserted that the other barriers facing teachers in regard to teaching, the lack of background and pedagogical knowledge can hinder the teaching of critical thinking skills and critical thinking; these include a lack of teacher training opportunities for both pre-service and practicing teachers. The other deficiency in this issue is assessment of critical thinking skills. Many educators do not feel that written tests can appropriately measure the students' higher-order thinking skills (Burns, 2009). Consequently, in spite of these, This is an education reform movement should be initiated to eliminate the gap related to the development of critical thinking skills because critical thinking skills will not only prepare students for postsecondary education and close the gap in college preparedness but also equip them with a 21st century skill necessary to compete in our global society thinking (Thurman, 2009).

The above-mentioned studies on argumentation and critical thinking skills generally investigated these two topics separately and experimentally. Few studies, however, focus on how students reflect their argumentation and critical thinking skills in discrepant science problems. In this paper, we report the preliminary findings on levels of elementary students' argumentation skills in a proposed science activity.

Objectives

Given this gap in the literature, the current study examined two important aspects of ability that pertain to argumentation and critical thinking on science concepts. In this respect, we investigated and compared the individual and group responses of students. Critical thinking and argumentation skills were investigated. Secondly, the students also commented on the discrepant problem and discussed it from different perspectives. Finally, the participants evaluated their responses, and their thinking skills extensively.

Research Questions

The literature reviewed indicates that although argumentation and critical thinking abilities have been investigated separately in mostly experimental studies, few studies attempted to focus on both concepts together. This study was therefore designed to address the following research questions:

- What critical thinking and argumentation strategies do students use when a discrepant science problem is presented?
- Do students' individual responses differ when they are in groups?
- What do students think about the discrepant science question?

METHODS

Research Design

As a method, a descriptive study carried out in the form of a case study was utilized. Structured and focus group interviews were conducted as data collection tools using a scientific problem of a discrepant event.

The discrepant event (Figure 1) in this study can be described as follows: "We have two identical glass containers and two different sizes of marble sets. Small marbles have around 0,4 cm and bigger marbles with 0,8 cm in radius. We filled each container to the top with marbles (up to its maximum capacity). We asked them "What can you say about the spaces between the marbles in each glass container?" "Are they equal or are some of them greater?" Later, they are asked to give support their ideas, indicate how sure they are and how to prove their ideas. Afterwards, they were asked to form groups and answer same questions with group members".



Figure I. Picture of the discrepant event question

To assess students' argumentation and critical thinking skills, the participants in this study were asked to complete a task that required them to engage in argumentation to explain a discrepant problem and discuss possible responses that makes sense. This task, which is called *the Marbles in the Jar* problem, required students to first determine which explanation, of three plausible alternatives, was the most valid way to explain their observations using the available data. Once the participants had determined which explanation best explained the phenomena, they started to explain their ideas in writing and drawing with appropriate reasoning and arguments. The participants in this study, who were enrolled in the 8th grade, were randomly assigned to this study.

Following students' individual explanations, critical thinking and argumentation about the problem, five groups were randomly formed. Each group consisted of 8 students with the exception of the last group, which had 9 students. The focus group interview took around 60 minutes for the investigation.

The groups were asked the same question and to come up with their group responses and explanations. Group members were engaged in intense discussions, arguments and a brain storming process as they

produced their group answers and explanations. They were allowed to raise their voices to group discussion levels as they discussed the explanation.

Lastly, the groups returned to their own seats. They were finally asked to think thoroughly about the discrepant event and list their ideas regarding it. Initially, it was expected that students in groups would respond to questions with higher levels of critical thinking and argumentation.

The Discrepant Event

We generated a new type of event followed by a question that entails students' reasoning, argumentation and critical thinking skills. The *Marbles in the Jar* problem focuses on density, volume, geometry and imagination. This scientific question requires students to generate a scientific argument that explains why two jars can hold an equal amount of water although they are filled with different sizes of marbles ($radius_1 = 0,4$ cm; $radius_2 = 0,8$ cm). This question has a basic explanation: two jars filled with different sizes of marbles would have an equal amount of space left among them. This could be explained as generating arguments such as comparing the densities of the different marbles and also the jars. Since the jars are identical, the densities of the marbles are the only variables that could make a difference. However, when students investigate each marble in both jars carefully, they would notice that the number of big marbles in the jar is extremely much lower the other that filled with smaller marbles. Also, when they examine them closely, imagining the situation in a two-dimensional picture, they would also observe that it does not matter how many circles are drawn in a square, the final spacing between the marbles and the jar stays the same.

Participants and Procedure

Forty-one students participated in this study. These students were all enrolled in the 8th grade science course at a small local private school located in the Mid-Eastern region of Turkey. Of them, 66% were male and 34% were female. The students ranged in age from 13 to 14 years. The school has a total of 184 students in grades 5-8. Their teachers described them as candidates for the top high schools.

The students who participated in this study participated in a 3-hour demonstration of the event, discussion of the event and potential reasonable responses and explanation session. The participants were informed about the process at the beginning of the event. The session took place in the conference room at the same school. Data were collected during the second semester of the 2012-13 academic year. In order not to reveal participants' identity, they were coded as S1 to S41 respectively.

The participants were introduced to the discrepant event "the Marbles in the Jar" following the introduction and information step. Students assigned to the individual argumentation step completed this task on their own. Later each student worked in groups in the second step with other group members. Students were required to describe their opinions about the proposed question and to emphasize their responses as well as their evidence to support them. To identify codes, themes and groups explicitly the researchers analyzed descriptively all of the evidence students gave to support their answers. Students were required to describe their opinions about the proposed question.

RESULTS AND DISCUSSION

The presentation of the results is divided into three subsections by the research question. Each subsection includes a brief overview of the analysis, the result of the analysis and a discussion of the findings.

Critical Thinking and Argumentation Strategies the Students Use for a Discrepant Science Problem

To compare individual and group performance, individual scores on the Marbles in the Jar problem were calculated and compared with group scores. When students are asked to answer the first question about the problem, they mostly agree that the jar with big marbles has more spaces among them (Table 1).

Table 1: Students' responses to the first question (Which jar has more spaces between the marbles?)

Students	Jar w/ small marbles (N)	Jar w/ big marbles (N)	Same (N)	No Info (N)
S1-4,6-17,19,20,22-34, 36-38,41		35		
S40	1			
S35			1	
S5, 18, 21,39				4
Total (%)	2.44	85.37	2.44	9.76

As shown in the table, at the beginning of the process, the majority of students (85%) indicated that big marbles would leave more spaces between them. This approach looks very easy as they can see the jars (Figure 1) clearly. In the second part of the first research question, the students specified their reasoning to support their opinions. Two tools were utilized for data analysis of this section: 1) Observation of the students during the data collection process and 2) Response sheets filled in by the students individually and in groups. Codes and themes were structured by using qualitative data analysis process.

During the observation process, the participants were carefully observed and recorded by a video camera. The data collection process took place in the conference room in the school basement. The seats were very comfortable and that probably affected students' attentiveness. Secondly, the person who posed the questions and asked for further responses was a foreigner and for that reason the local researcher translated everything he and the students said. On the other hand, since students could understand English well, no translational effects appeared in the study. In addition, seats were held in a position and so students had to turn to the side and around to talk to group members in group sessions.

Furthermore, based on the observational data, students seemed very relaxed about the questions; however, they were very curious. As the jars were shown and the question was asked, the students immediately started to raise their hands to answer the question. It was assumed that most of the students firmly believed that it was an easy question. When the researcher asked students what evidence they had to support their "arguments" or opinions, they were a bit frustrated, possibly because they thought there might be a catch in the problem. As they discussed the questions in their groups, they talked and argued about what they believe about the questions and tried to convince their group members. Some students drew pictures of the problem and explained why they thought as they did.

In the second part of the data analysis of the individual responses, the students' responses were coded and a few themes about the situation emerged. Emerging major codes included "Big marbles, easy question, difficult questions, simple, it is obvious". The majority of students thought that as they implied "Big marbles. There are more small marbles in the other cup." Or "Big marbles. Because they are big and can't take up all the space". These responses indicate that students thought the jar with big marbles would have more spaces between the marbles (Table 1). Therefore they supported their argument by specifying that "jar would hold fewer big marbles than small marbles" and for this reason there would be more spaces between the big marbles. Also, they used arguments such as "suggesting putting water in the jars" or "using the analogy of putting sands in a jar". In the first step of the process, the researchers did not show them the water bottles so it is very important that some students suggested beforehand the use of the water to prove they were right.

Twelve students suggested pouring water into the containers and measuring the volume of them. Interestingly, out of these students, only one of them considered that small marbles would have more spaces between them.

Students were asked about how sure they were about their answers. Only 11 of the students were very sure about their answers (80% or above); some of the students (N=12) were fairly sure (50% or above).

Comparison of Individual and Group Performances

As individual and group responses were compared, it was found that some students changed their minds when they joined a group. As illustrated in Table 2, all five groups indicated that big marbles would leave more spaces between them. However, only two groups specified that opinion (G1, G3). Although other groups did not expressly state which jars would have more spaces, based on their arguments, they clearly favored big marbles. All of the arguments developed by the groups expressed that “Pouring water in both jars and measuring the amount of water in each jar will show us which jar has more spaces” (G1).

Another significant finding is the groups’ arguments supporting their opinions (G1 and G3). They said that big marbles are like big particles and matter such as solid contains a larger number of particles so there should be more spaces in that. Groups 2,4, and 5 made an analogy of the spaces with sands and stones. They thought that smaller particles would fill up less space and for this reason leave more spaces. This shows that although they did not indicate that small marbles leave more spaces, their arguments still support that previous opinion.

Table 2: Groups’ Responses to the Problem

Groups	Jar w/ big marbles	Not specified	Arguments
G1, G3	X		Put water into the jars. Big marbles have big spaces between them. Big marbles have more particles. Greater number of particles means that more spaces e.g. solids.
G2, G4, G5		X	Put water in the containers and measure their volume with measuring cups. Melt the marbles and measure their volumes. Analogy with sands and stones.
Total (%)	40	60	

Students’ Opinions about the Problem

Table 3: Students’ opinions about the problem and how sure about their answers

Students	Difficult (N)	Easy (N)	Sureness (%)	No Info(N)
S.4,6-7,13-15,17,30,37	9		Less (4), 50 (3), very sure (75%, 2)	
S.1-3,8-12,16,19-20,25-29,31-34,38,40		24	Very sure (100%; N=16), less sure (50%-65%; N= 9)	
S.5,18,21-23,35,39,41				8
Total (%)	22	56		20

Table 3 shows that most students found the problem easy (56%), which means that initially it looked very easy. Interestingly, although some of them believed that it was easy some of them were not very sure about their answers and argumentation.

Each of the five groups supported the same thesis about pouring water into each jar and measuring that water to prove or find out which jar had more spaces. This result indicates that students were influenced by each other when in groups. Other group members convinced students to change their minds who originally believed that the jar with small marbles had more spaces between them. However, Groups 2, 4 and 5 did not specifically indicate their opinions as a group. This might be due to their disagreement about the situation. They probably did not reach agreement with their group members but none of the groups supported the view that the jar with small marble shade more spaces. This indicates that students supporting this opinion changed their minds in group discussions.

In the second part of the study, students were asked to write their opinions about the problem and how sure they are about their answers. Although 24% of the students (N=24) indicated that it was an easy question, some of them (N=9) were not very sure about their responses. Their arguments about it being easy were as follows: “It is easy because I saw a similar question”, “We can see it” and “It looks like easy”. Above arguments shows that students’ arguments were generally based on visual observation.

CONCLUSION

This study aimed to investigate about students’ argumentation skills and opinions about a scientific problem. The result of the study revealed that most students do not hold scientific argumentation skills. In order to increase scientific argumentation skills of students, educators should pose more such questions in the classroom. However, the biggest barrier for this is the standards and the curriculum. To sum up, students’ argumentation skills should be investigated in depth with observations, interviews and archival documents.

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Literature and Focus Group Analysis of the Approaches and Obstacle to Effective Educational Planning in Higher Education in an Emerging Economy

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Abstract

The Nigerian educational system has undoubtedly encountered a number of significant impediments in the last few decades and continues to struggle with the implementation and assurance of educational and teaching quality because of lack of effective planning. A shortage of accurate statistical data, financial, qualified planners, poor national economic performance, unsuitable governing structures, political interference, and general instability have all contributed to low quality in educational planning. This article looks at the meaning and context of educational planning, approaches and problems of educational planning. The paper employed literature and focus group analysis as sources of data collection. The study revealed that there is a significant relationship between the perception of male and female participants on the problems and approaches of educational planning in Nigeria. It further revealed that economic circumstance (finance), political interference, inaccurate statistical data and personnel among others are constraints to planning and implementation of educational programs in Nigeria. The paper concludes that in spite of the increasing complexity in universities administration created by rising students' enrollments and problems of research, programs of study must be tailored to the ever-more complex needs of the society. Universities are established for the improvement of society and thus, socio-economic planners and educational planners need to cooperate in planning processes for the benefit of both the universities and society.

Keywords: Educational planning, Planning process, Problems, Approaches, universities, Nigeria.

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INTRODUCTION

Uncertainty trails educational systems globally, and planning is arguably a phenomenal task aimed at addressing fears. It becomes much more daunting when it raises its head in an uncertain socio-political and economic environment for which Nigeria represents today. Uncertainties in the nation's educational systems, combined with other institutional inadequacies, might be grossly responsible for this situation (Dike, [n.d]). These worries have tended to inhibit educational production in most third world countries and particularly in Nigeria (Ololube, 2013). Over the years these doubts is obvious are the human and material resources base of the nation's educational systems. In general, the major problems affecting the universities in Nigeria are poor management and control of educational programs, training and retraining staff for capacity building, the selection and organization of curriculum content, curriculum implementation and evaluation, the development, distribution and use of teaching materials, and the relevance of the curriculum to the needs of society. Not surprisingly, there is also a problem with poor motivation and discipline (Adeniyi, 2001). Effective educational planning is a determinant of schooling quality as reflected in students' teachers and administrators' performance (see Bishop and Wößmann 2001). They went further to argue that the parameters which influence the level of schooling quality achieved in the model of educational production are mainly driven by educational planning.

Academics (Adeniyi, 2001; Nwabueze, 1995; Agi & Adiele, 2009) have discussed in their respective works the crises and problems facing educational planning in Nigeria. These problems are not peculiar to developing countries; schools in developed countries still compete for public funds with other sectors of the economy. Educational objectives can be achieved when resources are made available and put into maximum use. Thus, educational planning evolved as disciplines to guide the allocation and utilization of educational resources in the school system. This is required to arrest areas of waste of resources to make educational production more effective. In this regard, educational planning has become indispensable tool in the management of the university systems in order to achieve the desired goals of education systems around the world. However, educational planning is constrained by a number of factors. Onyeike and Owuama (2012) study revealed that inadequacy of funds, planning without accurate statistical data, political influence, and misappropriation of funds and shortage of qualified manpower were major constraints to educational planning.

Notwithstanding, the output of the educational planning process is the plan itself, which is a blueprint for action. It prescribes the activities needed for the education industry to realize its goals. Therefore, the purpose of planning is simply to ensure that the educational industry is effective in its activities. In a broader sense, an educational system must develop a plan that ensures that the appropriate products and services are offered to its students. More specifically, planning gives guidance and direction to members of an organization as to their role in the products and services delivery (Peretomode 1991, 1995; Naylor 1999). For example, a wise person who has enough money to build a house must necessarily make some initial decisions prior to the actual building of the desired house. In the first place, he may decide on the area or site of his interest and find out ways of representing the proposed building on paper for approval by experts. He may need to consult other experts to estimate the cost of the building so that he will know how much money will be required at each stage of the work. This is planning in action: planning is the process of determining a scheme for accomplishing a purpose. Such a scheme of arrangement is to be made beforehand by preparing a purposeful method of achieving the desired objectives (Whawo, 1993). According to Musaaazi (1982), planning is a rational process of preparing and coordinating a set of economic decision making for future actions directed at achieving objectives by optimal means. Admittedly, planning is a guide to the actions that are to be implemented at a future date. In other words, planning is futuristic. The rationale for planning is to effectively utilize available resources to attain a predetermined objective. The process involves strategies for manipulating several variables at the time of planning and their projection into the future.

Purpose of the Study

The primary objective of this study is to appraise and understand faculty perception and beliefs concerning approaches and problems of educational planning in Nigeria universities products and services delivery. In spite of studies (e.g., Coombs, 1972; Ololube, 2009; Agabi & Ogah, 2010; Alabi & Okemakinde, 2010; Onyeike & Owuama, 2012) confirming the importance of educational planning to the well-being of student, teachers and administrators performances, there remains the perception among some academic and non-academic staff in Nigerian universities that the ability to plan effectively and with enthusiasm may not be tied to the use of appropriate planning methods. Instead, they see planners' performance to be tied to intelligence, interest, and other personal traits.

This study also aims to identify best practices around the use of planning approaches and strategies in higher education administration and/or management, particularly in this time of scarcity when educational systems the world over are doing more with less. This atmosphere of inadequate resources is one of the strongest influences on education planning in higher education today, because in Nigeria, educational planning has not achieved much in terms of reforming the educational system (Alabi & Okemakinde, 2010). In this context, administration or management are used interchangeably to mean the process of achieving organizational objectives within a changing environment by balancing efficiency, effectiveness and equity, and obtaining the most from limited resources.

Educational planning in developing nations is faced with serious difficulties and the approaches adopted during the planning process are limited. In addition, there are limited research publications in Nigeria on the theme of this study, even those that exist tend to be quite narrow in that they fail to address the full range of possible features that might improve educational planning in higher education. This study looks to offer new insights into the diverse factors that support the use of approaches and methods. One of the central purposes of this study is to address the intellectual gap in understanding faculty perception around university productivity. In doing so, this study enters into the global debate on the use of planning for improvement of students', faculties and administrators performances from the viewpoint of a developing country.

Due to these short comings, the processes for effective implementation of planning have little hope of being achieved. It is quite imperative to investigate the problems that restrain effective planning and implementation and the approaches adopted in educational planning in Rivers State, Nigeria. To achieve this purpose, the following research questions were addressed:

- What are the major problems of educational planning in Nigeria?
- How effective are the approaches used in educational planning in Nigeria?
- What are the qualities of effective educational planning?

LITERATURE REVIEW

Planning Process

Educational planning in its broadest generic sense is the application of rational, systematic analysis to the process of educational development with the aim of making education more effective and efficient in responding to the needs and goals of its students and society (Coombs 1972; Ololube, 2009). The principal focus of educational planning in this definition is to make education more result-oriented for the development of the individual and the larger society. Adesina (1981) pointed out that educational planning is the process of applying scientific or rational procedures to the process of educational growth and development so as to ensure the efficiency and effectiveness of the educational system through a planning mechanism (see the Figure 1 for planning mechanism). In the planning mechanism, once feasibility of the

proposed service had been established a number of specific actions were necessary in order to ensure that an operational service could become a reality (Robertson, 1991).

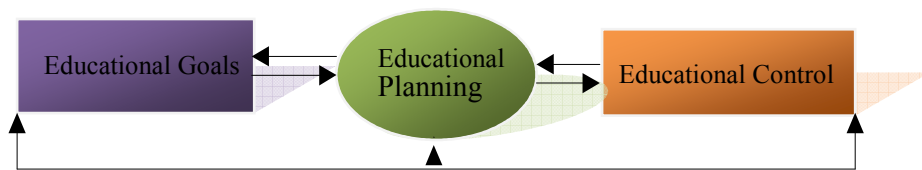


Figure 1: Planning Mechanism. Adapted from Ololube, N. P. (2013)

The aforementioned characterizations suggest that educational planning is a “process” as depicted in the Figure 2. This means that the outline of activities to be done is drawn up and sequentially arranged for implementation. A plan is described as efficient if the resources put into it are sufficient in meeting the stated objectives. An effective plan is one in which the desired objectives have been achieved. It is essential for educational production to be both efficient and effective if it is to properly guide the internal changes in the university as it utilizes the resources available. In other words, educational planning provides a foundation for all educational activities (Ololube, 2006a,b). It is the process of outlining the activities that are necessary to achieve the goals of education. Through planning, educational planners determine how education resources are to be allocated and how the activities of the education system will be assigned to individuals and work groups. Therefore, educational planning is a concise and deliberate attempt, through organized and continuous processes to identify the different elements and aspects of the university system. It helps us in determining the present state and interaction, hence projecting them throughout a given period of time. This is done by analyzing, formulating, implementing and controlling the actions that have evolved to attain the desired aims and objectives of university system (Ololube, 2013). This leads us to focus on enhancing the competitive position and the overall performance of students, faculty and administrators through strategic planning.

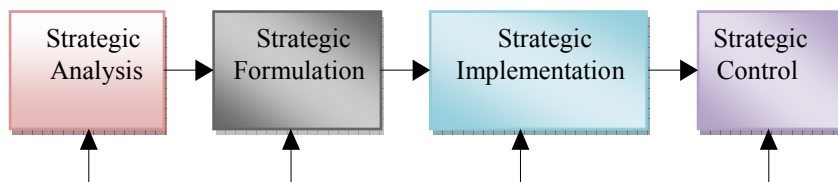


Figure 2: Feedback Process. Adapted from Ololube, N. P. (2013)

The history of strategic planning began in the military. According to Webster's *New World Dictionary*, strategy is “the science of planning and directing large-scale military operations, of manoeuvring forces into the most advantageous position prior to actual engagement with the enemy”. Although our understanding of strategy as applied in management has been transformed, one element remains prominent: the aim to achieve competitive advantage. Taking its name and roots from the military model, early formal strategic planning “reflected the hierarchical values and linear systems of traditional organizations, undertaken by elite planning function at the top of the organization, its structure was highly vertical and time-bound. A certain period would be set aside to analyze the situation and decide on a course of action. This would result in a formal document; once this was done the actual work of implementation - which was considered a separate, discrete process - could begin” (Wall & Wall, 1995). Although individual definitions of strategy vary between authors, traditionally, theorists have considered planning an essential part of organizational strategy (Ololube, 2009). Applying this to the university system, educational strategic planning is the process by which the universities make decisions and take actions that affects its long-term performance. It is an output of the planning process. It defines both the faculties in the universities and the students in relation to the

teaching and learning process. Operationally in this context, the feedback process is a mechanism in which educational institutions may need to cycle back to a previous stage in the planning process thereby creating room for adjustments if need be. At this point let us briefly take a glance at the various components of the strategic planning process.

Strategic Analysis

This is the first stage of the strategic planning process; it aims at evaluating the present condition of the education system. That is, it requires a thorough evaluation of the system's internal operation. The purpose of internal/external analysis is to identify the educational system assets, skills, and resources that represent strengths, weaknesses, obstacles and challenges (*SWOT*). Strengths are favorable internal characteristics that the educational system can apply to achieve its strategic goals. Weaknesses are internal characteristics that hinder or limit goal accomplishment. Obstacles are features of the environment that will cause the educational system not to realize its goals if it cannot resist or avoid them. Challenges are features of the environment that favor the educational system provided it is able to take advantage of them (Naylor, 1999). The focus here is that analysis looks at the current position of the educational system. The underlying idea here is that an application of SWOT into Nigeria's university system will go a long way in solving the ever-complex strategic management scenario facing university administrators instead of scavenging for thoughts.

Strategic Formulation

If the strategic analysis is completed and the current position of the educational system is ascertained, the next step is to look at where the educational system wants to be. It now follows that the mission of the educational system (the rationale for which the education system exists) has to be established. It involves setting strategic goals (the results that the educational system seeks to achieve in the long-term), identifying strategic alternatives as well as evaluating and choosing the strategy that provides the optimum performance of the educational industry in a long term. This idea is in line with what ICMBA (2004) opined when they asserted that once a clear picture of an organization and its environment is in mind, specific strategic alternatives can be developed. While different organizations have different alternatives depending on their situation, there also exist generic strategies that can be applied across a wide range of organizations. ICMBA cited Michael Porter who identified cost leadership, differentiation, and focus as three generic strategies that may be considered when defining strategic alternatives. Porter advised against implementing a combination of these strategies for a given product instead arguing that only one of the generic strategy alternatives should be pursued.

Strategic Implementation

After strategic formulation comes the implementation stage. The best-formulated strategy is useless or rather worthless if it cannot be implemented effectively. If the educational industry is to achieve the best result for which it was established through its strategic planning efforts, it must make sure that its strategy is put into action. The underlying idea here is ascertaining how the universities can get to where they want to be. The strategic planning process is the critical stage in the history of Nigerian educational development. Implementation of plans in the university system has been inconsistent and statistical deficiencies as well as inadequately skilled personnel inhibit the planning process in most cases. However, if a choice has been made on the strategy to use, according to ICMBA (2004), the strategy likely will be expressed in high-level terms and priorities. For effective implementation, it needs to be translated into more detailed policies that can be understood at the functional level of the university system. The expression of the strategy in terms of functional policies also serves to highlight any practical issues that might not have been visible at a higher level. For effective implementation of a strategic plan, the policies has to be translated as much as possible

into specific policies for the functional level line staff in the university system (academic and non-academic) to understand the purpose for which the plan is carried out.

Strategic Control

This is the final stage of the strategic planning process. Strategic control involves the monitoring of the implementation process thereby ensuring that it is in line with the expected performance. An effective university control system identifies problems inherent in the process and alerts the policy and decision makers who then make modifications. The underlying idea here is determining how the university system will know when it has arrived (Ololube, 2004; 2006b).

The reason that the university education production needs planning is vital at this stage of our discussion since there are several problems that face the university system in Nigeria (Nwabueze, 1995). One such problem is of the rising demand for university education and thus the increasing number of students enrolled. Brint (1998, pp. 37-38) argues that this rising demand for university education is necessitated to a significant degree by changes in the kinds of occupations produced by maturing economies. Though, he allows that occupational change is probably not the most important factor behind the rising demand for university education.

OBSTACLES TO EFFECTIVE EDUCATIONAL PLANNING IN NIGERIA

However nice this might be, educational planning in Nigeria face many challenges. Some of these problems include:

Administrative problem: Administrators are expected to be futuristic in all their activities. Since planning is goal oriented, educational planners are to identify various means that can lead to the attainment of educational goals and objectives, arrange them in terms of their effectiveness and efficiency and choose the most effective means in that regards (Ololube, 2013). The effect of bureaucracy on plan implementation is huge. A major function in the planning and implementation is performed by bureaucratic process, which is the administrative machinery of the government. An educational plan of necessity is filtered through the bureaucratic system for implementation. Bureaucracy is beset with myriads of problems which are likely to constitute impediments to plan implementation. This includes its own norms of functioning, which are commonly viewed as difficult and slow. This is sometimes termed red tape system of functioning (Gbenu, 2013).

Corruption: High level of corruption leads to the wastage of the limited resources that is made available into personal purses and sometimes used for projects not budgeted for (Gbenu, 2012). Ololube et al. (2012) and Dike, (2004) view corruption as the behaviour that deviates from the formal rules of conduct governing the action of someone in position of public authority because of private motives such as wealth, power or status. The latest Transparency International Corruption Perception Index (CPI) placed Nigeria as the 35th most corrupt country out of 174 countries that were assessed in 2012 (Transparency International, 2012). This is an improvement over the 2010 and 2011 ratings. It is clear that corruption is a major threat facing humanity and educational planning. Corruption destroys lives and communities, and undermines countries and institutions. It generates popular anger that threatens to further destabilize education and exacerbate violent conflicts in educational institutions (United Nations, 2012).

Economic circumstances: The Gross Domestic Product (GDP) and the Gross National Product (GNP) form an important economic indicator for measuring economic development. Other indices such as inflation and recession also help to assess the health and strength of an economy. Distress in economies, has led to the adoption of harsh economic policies that have adversely affected the management and planning of the education sector (Ololube, 2013). Regrettably, educational planning in Nigeria and other developing countries has faced a number of problems. Economic instability results to fluctuating budgetary allocation to

programs of education. This circumstance has a negative effect on a number of areas including, the quality, supply and demand for teachers, and the funding of new, improved and innovative schools (Agabi & Ogah, 2010). According to Samuel (2006) and Ololube (2013), the budgetary allocations that are available for educational planning in Nigeria are nothing to write home about. Funds provide for education planning is too small for proper planning to take place. The condition of the sector remains a thing of concern. Underfunding and systemic corruption makes the matter worse. The insufficient funding of the education planning sector stands as one of the major factors working against effective planning and implementation of education programmes (Alabi & Okemakinde, 2010).

Inaccurate Data: One of the most difficult challenges that educational planners face is the issues of inaccurate statistical data (Ololube, 2013). The quality of technical planning is in most cases inhibited by statistical deficiencies and inaccurate data. Nigerian education systems has failed to effectively plan because of lack of accurate data, which is because of the use of mediocre to prepare data for use in the planning and forecasting processes (Alabi & Okemakinde, 2010; Agabi & Ogah, 2010). Furthermore, issues such as ethnicity, culture and religion play major role in this regard. The religion-cultural problems to education are comprised of people's attitudes, behaviour patterns, norms and values, traditions and beliefs, lifestyles and demography. All of these factors have greatly influenced the way education planning is being managed in Nigeria. For the most part, Nigerian women are not given the same preferences or opportunities as their male counterparts. This is particularly common in the Northern part of the country where the girl child is withdrawn from school for early marriages or not permitted to attend school at all (Ololube, 2013). As a result the data collected are unreliable due to inappropriate collection, which makes it factually wrong and misleading. At times data are deliberately falsified to reflect a particular education bias (Onyeike & Owuama, 2012).

Inadequate and poor planning: There is a popular saying that "he or she who has failed to plan has planned to fail". Education planning in Nigeria has always been inadequate in line with the enormous facing our educational system. The lack of effective planning poses a significant obstacle to the advancement of education across the country (Agabi & Ogah, 2010). Poor planning technique is as a result of having incompetent planners manning planning sections in the Ministries of Education. Some of staff are not well versed in modern planning techniques that will make the job easy to minimize cost. They can hardly use or interpret data and of course can hardly subject data to real analysis (Gbenu, 2012). The evidence is true that the success of any educational system hinges on proper planning. Planning of human and material resources has evolved to guide the allocation and utilisation of educational resources in the school systems. Such planning is required to arrest areas of wasted resources and to make educational production more successful. Consequently, for any educational system to truly develop effective planning is indispensable as education and planning are essential characteristics for effective education (Ololube, 2013).

Inadequate skilled personnel: This has manifested its ugly head in the areas of those who plan for education and implement such plans. In addition to personnel being inadequate, some of those available are incompetent. All these have made planning for education difficult (Gbenu, 2012). Most educational planners in Nigerian do not have complete competence in planning. Professionally qualified planners are the single most significant resource that can lead to greater and efficient planning, productivity and performance (Adeyemi & Oguntimehin, 2000). In planning, what is needed is the effective utilisation resources by connecting the totality knowledge, skills and talents to achieve planning objectives. The quality of planners should not be nothing less than the basic acceptable standards worldwide (Ololube, 2013) (read more about professionalism and competence in a section of this article).

Inconsistent educational policies: Lots of educational plans have been jettisoned before they are ready for implementation because of government directives and counter directives. Besides, there is always a wide gap between policy formulation and execution, which researchers (Alabi & Okemakinde, 2010) say have rendered the educational planning process almost irrelevant. Often times, policies are changed by the Nigerian government.

Political arrangement: This refers to the effect of the use of power, influence and authority by the government of the day, especially in the allocation of resources. Legislation as a tool of government has

direct influence on policy formulation and the planning process. In general, legislators are compelled to serve the interest of special interest groups. There is therefore the possibility of conflicts between legislation and the rational ideas proposed by the technical planners (Gbenu, 2012). The existing political arrangement has influenced the control over educational planning in Nigeria (Agabi. & Ogah, 2010). According to Ololube (2006b), political instability have had its toll on educational programmes. Planning process started by one administration is brutally interrupted by the next and the differences between federal and state government education policies are quite challenging. The inability of the Nigerian political structure does not allow for education planners to be accountable for their wrong doings (Alabi & Okemakinde, 2010).

Technological Problem: Another serious problem in the planning of education in Nigeria is the lack of attention paid to emerging technological innovations in planning mechanisms. The success of education planners depends upon their ability to identify and respond to technological changes in other to elevate their planning output. Over the years, a number of technological changes have taken place that involves the introduction of modern advancements into the planning process and approaches, and understanding emerging issues related to educational planning (Ololube, 2013). According to Yusuf (2005), information communication technology can make planning more efficient and productive, thereby engendering a variety of tools to enhance and facilitate professional planning activities. Evidence (Ololube, 2013) reported that a large number of Nigerian educational planners and administrators do not know how to use ICT tools in their planning activities. This is a result of chronic limitations brought about by economic disadvantages and government policies; these factors have direct consequences on educational planning.

APPROACHES TO EDUCATIONAL PLANNING

Olambo (1995) identified three basic approaches to educational planning. They include:

1. The social demand approach
2. The human resources (HR) requirement approach
3. The cost benefit analysis

The Social Demand Approach

This approach requires the education authorities to provide universities and find facilities for all students who demand admission and who are qualified to enter university. This approach looks on education, as service demanded by people just like any other social services. Politicians in developing countries often find the approach expedient to use because of its appealing nature. The approach provides planners with the approximate number of places where educational facilities has to be provided. It is as well a suitable political tool to meet the need to satisfy the demands of the general public. In situations where resources are acutely limited, and where we are seeking to provide quantity education, which will offer the greatest good to the greatest number, this planning technique is presumed to be the best (Agi & Adiele, 2009; Ololube, 2013).

The Human Resources Requirement (HRR) Approach

The focus of this approach is to forecast the human resources needs of the economy. That is, it stresses output from the universities to meet the human resources needs at some future date. HRR approach could usefully call attention to extreme gaps and imbalances in the education out-put pattern that need remedy and provides educators useful guidance on how roughly educational qualifications of the labor force ought to be developed in the future. That is, the relative proportion of people who would have primary education, secondary education and various amount of post-secondary training. This approach looks at the unemployment and underemployment situations. Over-emphasis on HRR approach may become a challenge

to move towards the right kind of education which may be development-oriented, and thereby creating its own job. The HR approach focuses on 3 main elements, namely:

- Specification of the composition of human resources need at some future date, for example, 2020-2025.
- Specification of human resources availabilities, for example, in 2013.
- Specification, which reconciles the former specification with the later.

Cost-Effective Strategies

There is no general agreement on the most cost-effective strategies university administrators should use to demonstrate appreciation of their employees. However, the following have been cited by Wali and Elekwa (2012, pp. 190-196) as possible methods or alternatives:

- (1) Staff awards: staff will appreciate that their activities or actions are noticed and appreciated by their supervisor. For the administrator to achieve this, one option is offering a “behind the scene” award at the end of the year for humble employees who perform well. A teacher whose students excel in his or her subject in public examinations could, for example, be rewarded with such a prize. Similarly a teacher who makes a successful outing with students on an inter-school competition may deserve an award.
- (2) A surprise achievement celebration: quite simply, this can be achieved by providing a special lunchtime treat to an employee or team of employees whose actions deserve recognition. Alonge in Wali (2002) is of the opinion that administrators who give small gifts for special occasions (birthdays, weddings, etc.) or give free tea, coffee and snacks to their employees also makes them feel appreciated and motivated. In all of these cases it is the act of acknowledging the contributions and value of the employees.
- (3) Pass on praise: if a university administrator hears or is made aware of a positive remark about a staff person, he/she should repeat it to that employee as soon as possible, perhaps via email or send a thank you note to the employee’s home address, copying the Dean and Head of Department. This will show that the administrator understands how much the employee may have sacrificed or given to complete their assignment with excellence.
- (4) Publish a *Kudos Column* in the school newsletter and ask employees to submit kudos for their peers. Similarly set up a suggestion program by either establishing a suggestion box or completing university-wide questionnaires so that employees feel that their opinions and ideas are taken seriously.
- (5) Recognize employee value by delegating functions according to levels of competence: Wali (2010) observed that delegation is necessary for an organization like a university to exist and grow. Employees who are neglected in the distribution of functions often become apathetic to the achievement of goals.
- (6) Make teaching jobs challenging: University administrators should not allow teachers to stay too long in one assignment. In other words, classes and responsibilities should be rotated. University administrators should avoid saddling a willing staff with too many responsibilities, since a heavy work load has been identified as a major source of stress (Nwankwo, 1982).
- (7) Ensure that existing policies are not frustrating: Obnoxious policies can be an obstacle to an employee’s competence at work. There are, for example, schools where employees must fill out forms or wait for “visiting hours” before seeing their Vice Chancellors. Enyi (2004) notes that unless such rigid bureaucratic arrangements are dismantled and more open systems of administration are adopted, employees will continue to face unnecessary frustration at work.

- (8) Express interest in employee's professional development: Faculty training does not end when they begin teaching. Teaching demands rigorous and continuous training. Employee professional development and training should be seen as a continuum. University administrators should ensure that their employees attend programs that will increase their professional growth and capacity. Even if they cannot fund professional development opportunities, employees will still appreciate an administrator's interest and guidance in this regard (Ornstein & Levine, 2006).

Cost-Benefits Analysis of Education

The Cost-benefits analysis technique gives a simple, quantitative approach for deciding whether to go ahead with a decision. Cost-effectiveness analysis provides a method of comparing alternatives for their relative costs and results and in this way provides guidelines on which of the alternatives provides the most impact relative to cost (Wali & Elekwa, 2012). Applying this to the education context, Levin in Ololube (2013) asserts that cost-effectiveness enables measures of learning and other contextually-appropriate indicators to assess educational outcomes relative to costs. Adesina (1981) noted that cost-benefits approach looks at each level of education as investment in human beings with the purpose that the returns will help to improve the whole economy. Assumptions are that the wages and salaries paid to worker reflect differences in productivity. The variations in productivity result from different amount and kind of education people receive. It is a mode of analysis of current relationship between education and income. The benefits of this approach are that by looking at the age earnings structure of the educated person, it is possible to measure or quantify the increase in productivity of an educated person. The analysis can show or suggest the directions in which education systems in a society should expand so as to maximize the earning capacity of their products, and the relationship between the cost of gaining more education and the increase in payment which results from additional education (Olambo, 1995; Wali & Elekwa, 2012).

Advantages of Cost-Effective Strategies to Universities

The first advantage of cost effective strategies is that they are useful to university administrators given the limited and often inadequate resources at their disposal. Cost effective strategies can help to make the best use of the resources that are available. Secondly, cost effective strategies are useful where budget allocation or funds to perform certain activities are fixed and administrators are considering alternatives that may use the given level of funds in a new way so to achieve greater benefits or greater effectiveness. Finally, cost-effective strategies are useful to university administrators, policy makers and planners in situations where the objectives and benefits of a program and accomplishment are fixed. Cost-effectiveness analyses can enhance and complement national strategies to garner new political commitments and evidence-based action (Hu et al., 2007; Wali & Elekwa, 2012).

SWOT Analysis

A fourth approach to educational planning is the SWOT analysis approach. SWOT Analysis is a simple framework for generating alternatives from situation analysis. It is applicable to either the corporate level or business unit level and frequently appears in marketing plans. SWOT (sometimes referred to as TOWS) stands for Strength, Weakness, Opportunities and Threats. The SWOT framework was described in the late 1960's by Edmund P. Learned, C. Roland Christiansen, Kenneth Andrews, and William D. Guth in Business Policy, Text and Cases (1969). The General Electric Growth Council used this form of analysis in the 1980's because it concentrates on the issues that could potentially have the most impact; the SWOT analysis is

useful when a very limited amount of time is available to address a complex strategic situation (ICMBA, 2004). The Figure below shows how a SWOT analysis fits into the strategic analysis of education.

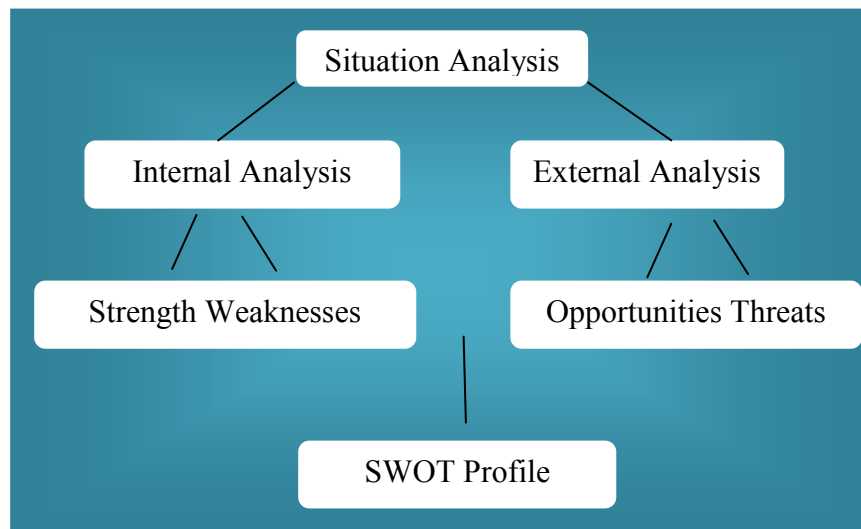


Figure 3: SWOT Analysis. Source: Internet Center for Management and Business Administration (2004).

Lerner maintained that SWOT analysis identifies factors that may affect desired future outcomes of education. The SWOT model is based on identifying the education industry's internal strengths and weaknesses, threats and opportunities of the external environment, and consequentially identifying the educational industry's distinctive competencies and key success factors. These, along with considerations of societal and educational values lead to creation, evaluation and choice of strategy. SWOT's objective is to recommend strategies that ensure the best alignment between the external environment and internal situation (Lerner, 1999).

The internal and external situation analysis can produce a large amount of information, much of which may not be relevant. The SWOT analysis can serve as an interpretative filter to reduce the information to a manageable quantity. SWOT analysis classifies the internal aspect of an organization as strengths or weaknesses and the external situational factors as opportunities or threats. Strengths can serve as a foundation for building a competitive advantage while weaknesses may hinder it. By understanding these four aspects of its situation, an organization can better leverage its strengths, correct its weaknesses, capitalize on golden opportunities, and deter potentially devastating threats (ICMBA, 2004).

PROFESSIONAL DEVELOPMENT/COMPETENCIES IN PLANNING

What is professional competence? What are the main domains and structure of professional competence? What part of competence can be upgraded by education? The answers to these questions are necessary for trying to find the most successful ways in maintaining and developing professional competence (Kautto-Koivula, 1993, 1996). There are considerable diversities in the terminology used in the study of professional competence in planning. The main reason for this is the early developmental status of the field and the multifaceted nature of the phenomenon being studied. Most of the research work to date has been discipline specific, so the concepts and terminology much reflect the perspective of a given discipline.

Moreover, since there are enormous diversities in the definition of the concept of professional competencies, and in as much as the competency concept is young and in development, the multiplicity of definitions does not mean that various scientific and professional publications do not agree on a single aspect of the competency concept. For example, Kirschner and Thijssen (2005) described the competency concept as a cluster of person-related qualities suitable to deal in a fitting manner with a clearly defined problem situation. Their definition holds where a reasonable level of agreement exists.

Though Eraut (1994) distinguished between professional competence claims, he noted that sometimes this is very general and means little more than being properly qualified, especially in professions where the unqualified are not permitted to practice. For instance, when clients or service users describe a professional as competent they usually mean that they have had nothing detrimental on the grapevine. That means the everyday use of the term professional competence carries some performance referencing, although it may be neither extensive nor specific.

According to Willis and Dubin (1990) professional competence involves the ability to function effectively in the tasks considered essential within a given profession. Nevertheless researchers like Willis and Dubin (1990); Eraut (1994); Kautto-Koivula (1993, 1996); Leino (1996) and Kirschner and Thijssen (2005) recognized that a network of colleagues or experts (professional associations) is an important tool in broadening the competence of individual professionals. By whatever means, there is a strong case for professional development according to OECD (1998). They concluded that for professional competence to flourish there must be greater collaboration between individuals, universities, and society at large.

METHODS

Since we entered the 21st century, current perspectives in scientific writings have evolved and researchers began to emerge in geometric progression in their methodological approaches which may favour a particular scientific pattern, as well as change track, either directly or indirectly in some instances. Researchers want their respondents tell their own stories and perceptions that reflects on their day-to-day experiences (Ololube & Kpolovie, 2012). Such reflections can become useful qualitative and quantitative data for researchers (Bowen, 2005; Poldner et al., 2012). This study encountered somewhat sceptical decision on the best kind of research approach to adopt. In the end, the choice to appreciate and support this choice that dictates the methodology to adopt in study was made.

This study employed a qualitative research design. The qualitative design adopted in this study is an inquiry process aimed at understanding the problems and approaches to educational planning with the purpose of building a complex, holistic picture, formed with words, reporting detailed views of informants that is conducted in a natural setting (Creswell, 1998). Furthermore this approach was used because it enabled obtaining and interpreting of information, its meaning and experiences in a broad standpoint. Two basic qualitative approaches were used:

Literature/Text Analysis

This study used literature and text analyses to evaluate problems and approaches to educational planning in Nigeria. The use and analysis of literature/text materials are an integral part of the instruments for data gathering. They are valuable sources of data gathering in educational management and planning. The categories of materials used in this study include both primary and secondary sources. Primary sources are in the form of report and publications that have first-hand information on the theme of this paper. Secondary sources include textbooks, journals, quoted materials, reports of researches carried out by other investigators, relevant to the theme of this study (Ololube & Kpolovie, 2012). The choice for this method is because its major advantage is that literature and text are generated contemporaneously with the events they refer to. Therefore, they are least expected to be subjected to memory decay or memory distortion compared with data obtained using interview method (Bowen, 2009). The materials used for this study were validated using Scott (1990) overlapping validity criteria *vis-à-vis*, authenticity, credibility, representativeness and meaning, which is guided my document selection (Bowen, 2005, 2009; Curry, Nembhard & Bradley, 2009).

Focus Group Discussion

The second approach that was used for data gathering was focus group discussion session (see Rabiee, 2004; Onwuegbuzie, Dickinson, Leech, & Zoran, 2009; Krippendorff, 2011). The focus group discussion was an interpersonal role situation in which the moderators ask questions designed to obtain answers pertinent to a research problem (Ololube & Kpolovie, 2012). The purpose of this second approach is to evaluate or assess respondents' perception on the theme of this study. The resolve is to produce a clear view about every piece of information obtained during the research period and find some unifying characteristics that portray a holistic feature of them all (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009; Maxwell & Loomis, 2002).

In this study, it is realized that the analysis and interpretation of focus group data require a great deal of judgment and care, just as any other scientific approach. The analysis and interpretation of focus group data can be as rigorous as that generated by any other method. Indeed, there is no one best or correct approach to the analysis of focus group data. Focus group interview was determined by the research question and the rationale for which the data are collected.

The interview was a focus group session scheduled to last for forty minutes during each session in a convenient and peaceful environment. At the inception of each session, the lead moderator of the interview took some minutes off to discuss with the group members the purpose of carrying out the research. It begins with open-ended grand tour questions that seek to obtain participants' overall orientation toward the theme of this study. In addition, a leaflet was handed to the participants stating the reasons and the basis for the research and guidelines for the discussion. At every stage the moderators raise the topic for discussion.

On completion of the discussion session, the initial step adopted was to first listen to the tape prior to the transcription as a method of analyzing the data. After the transcription, the researchers read the discussion transcripts repeatedly and wrote observational notes: memos, categorizing strategies (such as coding and thematic analysis) and note contextualization strategies. At this point memos were regularly written to capture the analytic thinking of the data collected. The next step is the categorization strategy through the use of coding method (see Maxwell & Miller, 2008). Its main objective is to crack the data and reorganize it into categories that will facilitate the comparison of data within and between the categories. This is followed the contextualization strategy, that is, linking the data or looking for various methods to identify the relationships among the different elements of data, which enabled looking for relationships that connect statements and events within a context into a coherent whole.

To achieve the goal of data analysis, the data gathered during the discussion session were graphed the same day they were gathered. As the day passes by, the points on the graph tells more about progress so far. According to Heinrich in Maxwell (1996), it is like a fox pursuing a hare. The graph is the hare's track, and we must stay close to that hare.

The final stage was to sort out ways to display the obtained data in a way that it will have meaning for the audience. Thus, tables were employed to make the ideas and analysis visible and permanent to facilitate thinking about the relationships among different elements, which gives it the most detailed presentation. All the members of the group were in their late 40's. They were comprised of 4 males and two females. Four from the Faculty of Education of the Ignatius Ajuru University of Education Port Harcourt, while two were from the Faculty of Education, University of Port Harcourt, Nigeria. The academic ranking of the participants in the group discussion comprised two Professors, two Associate Professors, and two Senior Lecturers (SL).

To establish the reliability of the recording exercise and the entire data-making process, Krippendorff (2011) four overlapping reliability criteria guided this process: (1) the nature of the raw data from which the recording/transcript was done; (2) the characteristics of the coder, including special skills such as familiarity with the subject matter and scientific research; (3) the training the coders needs in order to do the recording and (4) the specific rules for placing units into categories.

RESULTS AND DISCUSSION

Research Question One: Problems of Educational Planning in Nigeria

Analysis of data in Tables 1 of this study revealed that there is a significant relationship between the perception of male and female participant on the problems of educational planning in Nigeria. Same is true of Onyeike and Owuama (2012) findings. Their study revealed that there were no significant difference between male and female unit heads on the perception of constraints to educational planning and implementation. Thus, both male and female unit heads are of the view that economic circumstance (finance), political interference, inaccurate statistical data and personnel are constraints to planning and implementation of educational programs in Nigerian universities. The appointment into strategic decision making levels of educational planning is highly politicized, people who do not possess the technical competence in planning find themselves occupying such technically demanding positions. Even in situations where technical planers try to prove balanced superiority of their decisions, there has always been evidence of arbitrary use of political power to impose decisions over technocrat planners (Ololube, 2013). The study further found that shortage of accurate statistical data is a major impediment to effective planning. This implies that the unavailability of adequate and accurate data are essential constrains to effective planning of education programs. Onyeike and Owuama (2012) reported that in Nigeria, Malaysia and Indonesia data are falsified because of ethnic, religion and political implication. As a result, most of the data collected in these countries are unreliable due to inappropriate collection, making it literally wrong and misleading.

The quality of planners and the methods used should be basis within the planning content. The content of a plan, level of technological innovation and facilities used during planning determines whether the plan will have positive or negative change in instructional and administrative processes. It is obvious that professionally trained planners are the pillars of educational planning because of the kind of services they offer. The calibre of planners determines the outcome and growth of the planning process. No matter the availability of planning infrastructures they mean nothing if there are no competent planners. To ensure the successful operation of the planning process, professionally qualified planners are desirable to perform effectively. In other words, there is a great need for a sound professional planning background. An unqualified planner is an enemy to the educational progress and a danger to the development of education. For a non-professional planner to handle any aspect of the planning process is a very delicate problem because it concerns the growth, development and sustainability of educational planning.

In general, respondents recognized that some of the major problems affecting educational productivity in Nigeria are poor management and control of teacher education programs, teacher training and retraining, the selection and organization of curriculum content, curriculum implementation and evaluation, the development, distribution and use of teaching materials, and the relevance of the curriculum to the needs of society. Not surprisingly, ineffective educational planning supersedes all of the factors mentioned above. Effective planning is the determination of schooling quality, while schooling quality is reflected in students' educational performance (Bishop & WöBmann, 2001).

There are increasing demands for educational planning accountability and this universal phenomenon necessitates appropriate university management and planning. Respondents agree that inadequate and ineffective planning coupled with unplanned activities results in random, dysfunctional and are not directed towards the accomplishments of educational objectives. This is partly responsible for education ineffectiveness. Nigerians must make educational institutions in line with global best practices to account for the resources entrusted to them in terms of how these resources are used to meet educational goals and objectives. This logical philosophy underpins the process of feedback in education planning (Ololube, 2013).

Respondents are of the view that the high rate of corruption is responsible for faulty planning in Nigeria, and this has resulted into wastage of the thin resources available. The slim resources are put into personal purses and sometimes used for projects not budgeted for (see, Gbenu, 2012). This predominant behaviour deviates from the formal rules and conduct governing Nigeria universities.

The analysis revealed that the effect of bureaucracy on plan implementation in Nigeria is vast. Administrators fail to look at the future in their planning exercises. This problem is responsible for faulty educational planning in Nigeria. The function of planning and implementation is performed by bureaucratic process, which is the administrative machinery of the government. Educational plans pass through this bureaucratic system for implementation as a result this process is snowed under with several problems which are likely to obstruct effective plan implementation.

Table 1: Respondents' perception of the problems of educational planning in Nigeria

Focus group question on problems of planning	Professor Member 1	Professor Member 2	Assoc. Prof. Member 3	Assoc. Prof. Member 4	SL Member 5	SL Member 6
Inaccurate data is responsible for faulty planning in Nigeria	A	A	A	A	A	SE
Inadequate skilled personnel is responsible for faulty planning in Nigeria	A	A	A	A	SE	A
Technological problem is responsible for faulty planning in Nigeria	SE	SE	SE	A	ND	SE
Political arrangement is responsible for faulty planning in Nigeria	A	SE	SE	SE	SE	NR
Economic circumstances are responsible for faulty planning in Nigeria	A	SE	A	A	A	A
Inadequate planning is responsible for faulty planning in Nigeria	SE	SE	SE	SE	A	SE
Inconsistent policies is responsible for faulty planning in Nigeria	NR	SE	SE	NR	NR	SE
Corruption is responsible for faulty planning in Nigeria	A	A	A	SE	A	A
Administrative problem is responsible for faulty planning in Nigeria	A	A	NR	SE	SE	SD

Framework adapted from Onwuegbuzie et al. (2009), but modified to suit the purpose of this study.

Key to responses:

A = Indicated agreement (i.e., verbal or nonverbal)

D = Indicated dissent (i.e., verbal or nonverbal)

SE = Provided significant statement or example suggesting agreement

SD = Provided significant statement or example suggesting dissent

NR = Did not indicate agreement or dissent (i.e., non-response)

Research Question Two: Approaches to Educational Planning in Nigeria

Data from table 2 revealed that responses from the focus group discussion were not satisfied with the social demand approach of educational planning in Nigeria. They were of the opinion that education planners fail to determine the needed resources and facilities in universities in line with the rising demand for university admission. In addition, the HRR in universities are not adequately addressed. Predictions are always defective in the determination and forecast of the human resources needs of the Nigeria economy. Planners usefully are unsuccessful in calling attention to the excessive gaps and disparity in the education out-put pattern. They fail in their attempt to provide practical guidance on how the qualification levels of the labour force will change direction in the future. Thus, educational planners fail in their specifications of the composition of human resources needs and availabilities at some future date. Most importantly, they fail in their capacities to reconcile HR needs and availabilities.

Response shows that the cost-effective analysis approach to educational planning in Nigeria is ineffective. Educational planners fail to tally quantitative approach to decision making, provide a method of comparing alternatives for their relative costs and results and provide guidelines that determines alternatives impact that is relative to cost. Thus, planners do not emphasize cost-effectiveness and benefits that enables measures of teaching and learning. Tallying wages and salaries paid to workers to reflect productivity. Their analysis do not suggests the directions education systems should follow. This revelation is in line with the studies of Olambo (1995), Wali and Elekwa (2012) and Ololube (2013). According to (c.f., Hu et al., 2007), cost-effective strategies are useful to university administrators, policy makers and planners in situations where the objectives and benefits of a program and accomplishment are fixed. They further observed that cost-effectiveness analyses can enhance and complement nationwide strategies to garner new economic, political, social and educational commitments and evidence-based action.

Results from the respondents show that educational planners fall short in their determination of the internal strengths and weaknesses, threats and opportunities in relation to the external environment, and are unable to identifying universities distinctive competencies and major success factors. According to Ololube (2013), planners are unproductive in their evaluation of the present conditions of the universities system, evaluate where the university system want to be, put into action university’s strategic plans and fail to identify the problems inherent in the university planning process and inform the policy/decision makers and government on modifications and the way forward.

Table 2: Respondents’ perception of the approaches to educational planning in Nigeria

Focus group question on approaches to planning	Professor Member 1	Professor Member 2	Assoc. Prof. Member 3	Assoc. Prof. Member 4	SL Member 5	SL Member 6
Is the social demand approach to educational planning in Nigeria effective?	SD	SD	D	SD	D	SD
Is the human resources (HR) requirement approach to educational planning in Nigeria effective?	D	D	SD	D	D	NR
Is the cost-effective analysis approach to educational planning in Nigeria effective?	SD	D	SD	SD	SD	SD
Is the cost-benefit analysis approach to educational planning in Nigeria effective?	SD	SD	D	SD	SD	SD
Is the SWOT analysis approach to educational planning in Nigeria effective?	SD	D	D	SD	SD	SD

Framework adapted from Onwuegbuzie et al. (2009), but modified to suit the purpose of this study.

Key to responses:

A = Indicated agreement (i.e., verbal or nonverbal)

D = Indicated dissent (i.e., verbal or nonverbal)

SE = Provided significant statement or example suggesting agreement

SD = Provided significant statement or example suggesting dissent

NR = Did not indicate agreement or dissent (i.e., non-response)

Research Question Three: Qualities of Effective Educational Planning

The under listed were summarized to answer research question three:

Professors’ perception of effective planning:

Effective planning result in a conducive environment in educational programs
Effective planning motivates students, faculty and administration
Effective planning promotes skills and knowledge
Effective planning meet the aspiration of current situations
Effective planning improves management techniques and problem-solving methods
Effective planning equips educations managers to effectively do their jobs
Effective planning hastens the integration of education and socio-economic opportunities.
Effective planning propels future expectations of education

Associate professors' perception of effective planning:

Effective planning brings about proper application of management principles
Effective planning accelerates quality education reform
Effective planning brings about innovations and new methods in educational system
Effective planning stimulates students, teachers and administrators to better performance
Effective planning creates conducive environment for stakeholders to strive
Effective planning cuts operations costs in the education system
Effective planning reduces the risk of uncertainties in educational system
Effective planning leads to more effective and efficient response to education problems

Senior lecturers perception of effective planning:

Effective planning produces quality changes in the educational systems
Effective planning brings about low dropout rate school
Effective planning creates good environment for teaching and learning to take place
Effective planning creates oom for effective implementation of the curriculum
Effective planning is aimed at all round development of the education system
Effective planning is result-oriented
Effective planning leads to systematic analysis to the process of educational development
Effective planning leads to improve standards of education

CONCLUSION

As enrollment in universities increases daily, the available resources may become over-stressed. The situation becomes even more frightening when university education programs globally are been reformed. Therefore, adequate planning of the human and material resources is needed to address the issue of ever-increasing enrollment and the need to provide them with faculties who are experts and can help them achieve appropriate educational objectives. Additionally, the rising cost of education leaves some universities with low quality and inadequate material and human resources. This is because there is no cheap higher education the world over. Thus, the need for alternative ways of running and utilizing slim resources, and best practices to attain set objectives makes planning imperative. The complexity of schooling, its constraints, contingencies, and other difficulties also make planning a necessity. The scarce resources in universities may be wasted if their utilization is not properly planned.

According to Meyer (1998), the rapidly increasing universities enrollments around the world, in industrial and non-industrial societies alike, cannot simply be explained by occupational changes. At any given level in the schooling process an S-shaped enrollment curve can be traced. At first enrollments increases slowly, and when they reach a "tripping point", however, they rapidly level off once near-universal universities enrollment has been achieved. Thus, even more important than occupation change has been changing expectations about how much schooling is "enough." Some families may begin to see universities

as providing important social benefits, such as the prospect of mixing with a higher class of people while others may see it as providing possible opportunities for economic advancement. These families will pursue strategies that allow them to invest more heavily in university education.

Despite the increasing complexity of universities created by rising enrollments and problems of research, programs of study must be tailored to the ever-more complex needs of the society. Universities are established for the improvement of society and thus, socio-economic planners and educational planners need to cooperate in planning for the benefit of both the universities and society. The need to plan for quality higher education reform in any nation cannot be over-emphasized. When reforms are adequately planned, it accelerates structural integration of a plural society by equalizing economic, social and political opportunities (Alabi & Okemakinde, 2010), this can only be achieved through effective educational planning, because educational planning is concerned with the problems of how to make the best use of limited resources allocated to education in view of the priorities given to different stages of education or different sector of education and the need of the economy (Olambo, 1995; Ololube, 2013).

Future Trends

This study suggests several possibilities and propositions for future research and practice. These inferences pertain most directly to students, researchers, faculty and higher education institutions. At the management level in higher education, this study calls for policies to ensure balanced investments in, and increased funding for education planning that will allow for the effective use, integration and diffusion of educational planning services and methods in the teaching and learning processes. As with other studies, the findings in this study should not be regarded as definitive but offering students, faculty, educators, researchers, planners and administrators a view of the author's reality on the use of educational planning higher education in a developing economy. The importance of effective planning in higher education cannot be over-emphasized, however, the evidence points to the fact that educational planning is critical at this stage of developing countries effort towards meeting the millennium development goals (MDG's) as well as the stated global vision for education, particularly in meeting Nigeria's Vision 20: 2020. Therefore, effort should be put toward a better and sustained educational planning agendas for our future development in education, social, economic, political and cultural goals.

A pertinent question need to be asked, how do we counter the effects of corruption on educational planning? Lucid answer to this question would be that governments globally need to integrate anti-corruption actions into all aspects of corruption; prioritize better rules on lobbying and political financing and appointments into planning systems, make public spending and contracting more transparent, and make public bodies more accountable. Thus, it is expected that Nigeria should take tougher stance against the abuse of power. The 2012 Corruption Perceptions Index (CPI) (Transparency International, 2012) results demonstrate that there are still many societies and governments especially in the third world that need to give a much higher priority to the issue of corruption.

The issue of ethnicity, religion and culture arising from beliefs, traditions, behavior pattern and values, should not supersede the issue of proper planning. Government should intensify efforts to orientate people using the mass media for people to understand the uniqueness and importance of planning and the need to provide adequate data.

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A Trial for Giving Studying Habit for Effective Teaching

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Abstract

Teachers expect students to be prepared for class upon arrival and to review the day's lessons once at home. Those who do not prepare for class beforehand have difficulties participating in the class and their learning process becomes more difficult. This study examines ways to increase preparation levels of students and so turn their learning process into a more participatory and engaging one. The group involved in this study consisted of university students studying primary school teaching. One hundred and thirteen of the participants were female while 57 were male. The study took place over a ten week period. In the first fifteen minutes of each class, short answer exams were administered. Each student answered the questions independently. Following these exams, active teaching methods were used in the classes. At the end of the ten weeks, three questions, each with two sub categories were asked of the students and data, in the form of opinions, was obtained. Almost all of the students, 92%, stated that they would try the practice as teachers. The classes in which they would apply the practice are Introduction to Science, Social Studies and Science and Technology classes. It was noted over the course of the study that negative orientations such as fear, nervousness, and difficulty were replaced by more positive ones such as usefulness, readiness and comfort. It seems possible that this shift is a result of students embracing the method used in the study

Keywords: School achievement, Student class preparation, Study habits, Attitudes towards studying.

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INTRODUCTION

The reasons for success or failure, particularly in terms of cognition, are regularly questioned in the education system. Positive outcomes are sought as a result of the energy and efforts dedicated to good student outcomes at almost every level of education. In the meta-analysis research of studying habits, skills and attitudes, study habits, study skills, studying motivation, and attitudes towards studying were found to be significant variables in explaining student success (Crede & Kuncel, 2008). In his study on university students, Aquino (2011) found that the students with high levels of success had good study skills and attitudes as compared with students with low level of success.

Study habits refer to the degree that students carry out class-related activities by themselves when away from school. Good study habits involve the use of proper study strategies and the devotion of adequate time and resources to meet academic expectations. Attitudes towards studying involve the student's internalizing of his/her learning objectives by him/herself. Although the acquisition of study habits is clearly advantageous for students, many claim that they do not have time to study in their busy lives (Nonis & Hudson, 2006).

Research has found that when the students use good study habits and learned memory strategies there are notable improvements in academic success (Bugg, Delosh & McDaniel, 2008). In his study on the variables affecting the success of university economic students, Darwin (2011) found that both student effort and student study habits were important factors. Mawthoh and Kumar (2011) tested the effects of study habits, gender and faculties on the success of students in the faculties of fine arts, science and economics and found that while gender didn't have an effect on study habits; students in the faculty of science were significantly different in terms of study habits than those in other faculties.

Although most students are aware of the importance of acquiring good study habits, if this awareness does not include an obligation, they tend to postpone. Demirel and Gülsoy (2010) conducted a study on candidates who graduated from university and subsequently enrolled in an English language certificate program. In this study, the learning and study characteristics of the students were assessed and students identified their tendency to postpone studying for a variety of reasons. Similar findings were noted in a study by Berr et al. (2011). This study interrogated university students about whether they arrived in class having read the required text and how much time was spent engaged in such readings. Students in the study stated that they were aware of the importance of reading the text, knew the instructors expected that they would complete their readings, and found the classes to be more fruitful when they did so. In spite of this, however, they were not in the habit of coming to class having read the text.

Nonis and Hudson (2010) studied the relation between time spent studying and the study habits of students in economics. A significant relation was found between the time spent for study, particular study habits and success. In this study, contrary to expectations, last minute studying and well prepared summaries were found to be effective in increasing student success.

METHOD

This study was conducted after three years of trial practice/pilot studies at post graduate level. In their oral statements, post graduate students noted that while they had a hard time at the beginning, after a while they found the method to be fruitful. The central objective of this study is to encourage students to adopt good study habits. Studying before attending class increases the level of readiness of the students and the subsequent quantity and quality of material learned in class. This leads to a more effective teaching process and long-term learning.

Research Design

This research was conducted with a single group. No control group was used.

Study Group

The study group consisted of third year students in the Primary School Teaching Department of Mehmet Akif Ersoy University's Faculty of Education in 2011-2012. A total of 170 students across six classes participated in the study. The rate of male student participation was 33.5% (f= 57), while female student participation was 66.5% (f=113).

Data Collection

At the end of 10 weeks, three open-ended questions, each with two sub-categories were given to students. Answers were requested in written form and were subsequently subject to content analysis. In the analysis of responses, categories were created based on questions arising from the answers, key words were selected, sample sentences were determined, and finally data was interpreted (Yıldırım & Şimşek, 2004).

Process

The class under study, "Teaching of Introduction to Social Studies" is a theoretical class worth three national credits and is taught in the autumn semester of the third year of the primary school teaching department. The content of the next week's unit was determined together with the students. In the first fifteen minutes of each class, short answer exams were administered with three to five questions. Students answered the questions independently. Results of the exams were announced the following week. The average grade obtained until exam week was considered the mid-term grade and the average grade obtained until the final week was considered the final grade. The units for which the students were responsible consisted of about 25 pages. The study took ten weeks. Following the short exams, active teaching approaches were used in the classes.

FINDINGS

The questions directed to students, and their respective answers, are detailed below.

Question 1: Will you apply the short exams practice when you become a teacher? If yes, to which class or classes?

Table 1: Ideas concerning the short exam practice and the classes

<i>Answers</i>	F	%
Yes	156	92
No	14	8
Total	170	100
<i>Classes</i>	F	%
Social Studies (1-3 grades)	144	29
Social Studies (4-5 grades)	126	26
Science and Technology	89	18
Turkish Language	84	17
Math	30	6
English	10	2
Other classes	8	2
Total	491	100

Almost all of the students, 92%, stated that they would try the practice as teachers. The classes in which they would apply the practice are Social Studies and Science and Technology classes. For the most part students selected the classes in which one can learn by him/herself or achieve pre-learning.

The varying observations offered by students, in addition to the abovementioned class names, are as follows:

Student 1: “Yes, if I want students to come to class after some preparation, the method is proper.”

Student 2: “If the students come to class after preparing for the short exam it would be easy for the teacher to explain the subject and for the student to understand it. Therefore I can apply this method.”

Student 3: “This practice may help me know about pre-knowledge of the students.”

Student 4: “Actually if I have the time, I would like to apply this method at the beginning of every class.”

Student 5: “Yes I will use it. This practice leads students to come to class after some preparation and have information on the subject.”

Student 6: “I would like to apply it, because it would be fruitful to stimulate pre-knowledge of the students.”

Student 7: “I think I will apply it, because the more prepared the students are, the more positive the learning is.”

Question 2: Can you describe the emotions caused by pre-class exam at the beginning of the practice and now? The answers are presented in Table 2.

Table 2: Distribution of emotions before and after the practice

<i>Before the Practice</i>			<i>After the Practice</i>		
<i>Emotions</i>	F	%	<i>Emotions</i>	f	%
Fear	65	24	Helpfulness	124	29
Anxiety	54	20	Readiness	96	23
Difficulty	47	17	Comfort	88	21
Astonishment	35	13	Got over my fear	49	11
Anger	26	10	Got over exam anxiety	45	10
Pressure	25	9	Easiness	24	6
Reluctance	21	7			
Total	273	100	Total	426	100

As outlined in Table 2, initial negative emotions such as fear, anxiety, and difficulty gave way to positive emotions such as helpfulness, readiness and comfort as the practice unfolded. It is possible that the success achieved by the students influenced the change in their emotions.

The varying observations offered by students, in addition to the abovementioned before and after emotions, are as follows:

Student A: “At first I was scared, because having an exam every week made me nervous. Now it think it was really good for us. We came to class prepared, had knowledge and did not get bored in the class because I knew the subject.”

Student B: “I was scared at first, I asked “Are we primary school students, what is that?”, but I was wrong, it proved to be useful. It is really good and should continue. You read about the subject or maybe just take a glance, but still it helps.”

Student C: “At the beginning I was scared, because it was pointless to have the an exam before knowing anything about it... now it enables me to have an idea about the subject and get a brilliant knowledge of the subject.

Student D: “It was pointless, but since it is easier than studying for the regular exam, I think it makes sense.”

Student E: “I was nervous at the beginning... a good practice for coming to every class prepared.”

Student F: “I was alarmed in the first week, but later on I was relaxed. Since I was ready for the class, I was quite willing.”

Student G: “I thought it made no sense, in fact studying was hard and I was getting nervous before every exam. Having exams often enabled me to come over my nervousness”

Student H: “...I thought preparing for an exam every week was hard and boring. Since everyone was prepared for the class, it was more fun...”

Student I: “I was terrified, it scared me so much that I had to study, study the whole unit and then come to the class. We had such a nice semester contrary to my expectations. Having an exam every week is easier than a full exam.”

Student J: “It was hard at the beginning, coming to the class with the knowledge of the subject is better.”

Student K: “It was surprising and worrying to have an exam at the beginning of the class... later on I understood it was only about if the subject was learned or not... then I was comfortable again and appreciated the practice.”

Student L: “It was weird at first because we are used to having exams after the classes. Also I was scared that I would not be successful. The lectures were not totally unknown to us, because we were scanning the subjects beforehand. This is a proper method for a fruitful class.”

Student M: “I was surprised as this was a new method for me. “Is this possible?” I said. I got used to it as I took the exams and I think this is a useful method.”

Question 3: Can you list the positive and negative outcomes you have experienced as a result of this practice?

Table 3: Positive and negative student outcomes

<i>Positive Outcomes</i>	<i>f</i>	<i>%</i>	<i>Negative Outcomes</i>	<i>F</i>	<i>%</i>
Class preparation	114	28	Anxiety	36	36
Studying habit	94	23	Fear	31	31
Attendance habit	76	18	Nervousness	21	21
Participation	73	18	Waste of time	12	12
Thinking skills	54	13			
Total	411	100	Total	100	100

As shown in Table 3, the method had a positive effect on class preparation, class participation and attendance. It is also clear that some students were not able to overcome negative emotions such as anxiety, fear and nervousness. It is suspected that such emotions would dissipate in the long run.

Additional student observations on the positive and negative outcomes are as follows:

Student N: “I cannot think of a negative characteristic. Since we were prepared for the class, it was easier to remember the subjects.”

Student O: “I think the time was limited, if we had more time we could study further. It helped me improve my criticism skills and ability to comment.”

Student P: “Exam stress every week led me to study regularly. Instead of studying just for the exams, we studied every week.”

Student R: “Receiving a grade put pressure on me, but this feeling went away after a while. Coming to the class with some knowledge helped me learn the subjects further.”

Student S: “At first we had stress and nervousness but in time we got used to it and got a good command of the classes.”

Student T: “I had to attend the class even if I had important things to do, therefore I gained the habit of full attendance.”

Student U: “At the beginning, I was reluctant as we had to come to class after some preparation every week, but unintentionally I started to study regularly and that helped me participate in the class during lectures.”

Student V: “Before the exams, people get nervous. As I came to class after preparation, the class was more fun...”

Student W: “It was hard to spend time studying every week. As we had knowledge on the subject, the lectures were not totally new to us.”

Student X: “Getting stressed regularly every week was kind of hard. Although it was hard, I managed to coordinate myself and study regularly every week.”

CONCLUSION

This study observed that as students internalized pre-class studying, their feelings about the practice, the exam, and their class, improved. Success at the university level is typically evaluated through a midterm and final exam. In both cases, students must become acquainted with a considerable amount of content. In this method, although students indicated having a hard time at the beginning, they adjusted to the regular short examinations and came to find them useful.

When students were asked about the ways in which they benefited from this approach, they noted improvements in class preparation, studying, and participation in line with the expectations of the teachers. At the end of the ten week study, a few students noted that they continued to experience fear and anxiety. This is likely to have been minimized were similar practices carried out in more than one class. In this study, the practice was carried out by the researcher. Throughout the process, participation and interactivity rates of the students increased and a productive and effective teaching process was achieved.

Recommendations

In this study, grade-based evaluation was preferred in order to ensure that the students came to class after they had prepared. At the level of primary school teaching, considering the ages of the students, various other methods may be used instead of grade-based evaluation.

At the level of branch classes, especially in social studies, the method may be tried in secondary and high schools.

This method can be easily applied in post-graduate studies considering the limited number of the students.

In order to accelerate the evaluation process of the questions, answers may be reflected via projector and the results may be reached in a couple of minutes.

This method can be tried in math and science courses for completing the prerequisite learning.

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Improving Industrial Harmony and Staff Performance in a School Organization through Effective Communication

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Abstract

Communication is vital to any social system as it creates an environment of trust, harmony and proficiency. It promotes effective management practices and motivates staff to greater productivity. Communication is an inevitable and important tool of management. Organizations that withhold information or give it grudgingly may breed conflict, mistrust, suspicion, confusion, or crisis. From this perspective, management must communicate with staff regularly to achieve industrial peace and harmony and increase worker performance. This paper discusses effective communication, industrial or organizational harmony, the essence of communication, and the school manager and communication. This paper also discusses how to use communication to improve both industrial harmony and staff performance. Finally, it recommends encouragement of constant bottom-up communication, in addition to top-down communication, to ensure that the views of subordinate staff are well understood and incorporated in decision-making.

Keywords: Communication, Industrial Harmony, Employee Performance, Education Managers

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INTRODUCTION

Communication is crucial to worker involvement so as to increase mutual understanding between management and subordinates and enhance personnel productivity. Evidence abounds that employees need information as much as management need feedback from employees. Through communication, management can establish mutual understanding and exchange of ideas, information, experience and innovation for peaceful co-existence, conflict resolution, and cumulative development, progress and well-being of the organizational structure. A good communication network in a school, therefore, helps to orient workers, and increase staff involvement and commitment to the main objectives of the system. Braimoh (1985) notes that communication is not only prescribed as the panacea for almost all ills in an organization, but also a means of improving understanding among those engaged in industry, business, government, and other organizations. Communication among management, staff and students in a school system is imperative for the growth of ideas and so as to achieve effective the interpersonal relationships needed for the seamless operations of the school organization.

Despite the aforementioned evidence, a good percent of organizations, both industrial and educational, find it difficult to organize and motivate subordinates due to ineffective communication networks or channels. According to Iwanbe (2002), most organizations are either lukewarm to information meant for workers or they communicate in a haphazard manner so that the intended message never reaches the employees or students (in the case of school organizations) in a manner they can properly decode. This in turn mars the communication machinery of the school or organization and the school fails to realize its set goals and objectives. It is in this way that inadequate communication in a school setting can breed misunderstanding, suspicion, mistrust, rumours, and ultimately, conflict or crisis.

In recent times, Nigerian educational institutions have experienced disharmony, instability and other forms of industrial conflict. This situation has resulted in low productivity in the schools. Most of these problems have been as a result of poor communication (Enyi, 2001). According to Nworgu (2005), most Nigerian universities have experienced a series of crises caused by poor communication between students and university administrators. Udejah (2001) notes that when the appropriate organ does not provide the required information, substitute communication develops in the form of rumours, gossip and falsehoods. These, in turn, have the potential to generate conflict within the institution. Thus, Cherrington cited in Nworgu (2005), observes that conflicts between groups can be an indication of a lack of effective communication and positive interaction. Conversely, when used properly communication enhances the prompt detection of internal strain, serves as preventive factor in conflict situations, and increases worker productivity. It is thus imperative that school administrators realize the potential for communication to improve industrial harmony and workers performance.

The purpose of this paper is to examine the meaning of effective communication, the essence of communication in a school organization, and the relationship between school managers and communication. It surveys how to use communication to improve industrial harmony and staff performance in a school organization.

INDUSTRIAL/ORGANIZATIONAL HARMONY

Industrial/organizational harmony refers to a friendly and cooperative agreement on working relationships between employers and employees for their mutual benefit (Laden, 2012). According to Puttapalli and Vuram (2012), industrial/organizational harmony is concerned with the relationship between management and employees with respect to the terms and conditions of employment and the work place. In effect, it is a situation where employees and management cooperate willingly in pursuit of the organization's aims and objectives. Industrial/organizational harmony requires that:

- All management personnel understand their responsibilities and what is required of them, and have the training and authority necessary to discharge such duties and responsibilities efficiently;

- Duties and responsibilities for each group of employees are stated with clarity and simplicity in the organizational structure;
- Individual employees or work-groups know their objectives and are regularly kept informed of progress made towards achieving them;
- There is an effective link in the interchange of information and views between senior management and members of the work group;
- Supervisors are briefed about innovation and changes before they occur so they can explain management's policies and intentions to the work-group;
- Employers cooperate with trade unions in establishing effective procedures for the negotiation of terms and conditions of employment and for the settlement of disputes;
- Employers encourage the establishment of effective procedures among member organizations for the settlement of grievances and disputes at the level of the establishment or undertaking;
- Employers take all reasonable steps to ensure the organization observes agreements and agreed upon procedures; and
- The organization maintains a communication system which secures the interchange of information and views between different levels in the organization and ensures that employees are systematically and regularly kept informed, factually and objectively, of changes and progress in the system.

Industrial/organizational harmony thus covers four broad areas of cooperation: responsibilities, employment policy, collective bargaining, and communication and consultation. Industrial/organizational enhances labour productivity and in turn improves performance in the education sector, achieving economic growth, and enhancing living standards and quality of life. It creates a peaceful working environment conducive to tolerance, dialogue and other alternative (to strike) means of resolving industrial/labour disputes in Nigeria (such as negotiation, mediation, arbitration, conciliation and litigation or court adjudication) (Laden, 2012). This creates a high level of employee satisfaction.

EFFECTIVE COMMUNICATION

Communication is the exchange of information and meanings between or among those who are communicating through a common system of symbols. Communication is a means of passing information from one person or organization to the other. It is an avenue for impacting knowledge or discussing views and opinions with others. All communication has one major goal, changing the consciousness and behavior of the message encoder and decoder to the extent that the decoder responds with feedback to the encoder. Effective communication thus occurs when the receiver successfully decodes the sender's coded messages (symbols) and sends positive feedback to suggest that his/her subsequent behavior is congruent with the shared experience contained in the communicated message. In other words, there must be a relation between the sender and the receiver of the message through the appropriate channels that will cause him/her to respond. Here, response or reaction to the message is referred to as feedback.

In communication, a message is deemed effective when it is sent, received and well-understood by both parties (encoder and decoder). There is the need, therefore, for an administrator to systematically and carefully choose the medium and language or words to be used in passing information to employees. In ascertaining communication effectiveness, Ezeocha (1989) averred that communication is effective when it reveals the understanding of the ideas or contents of information or accurate interpretation of all that is contained in the information. Effective communication is thus not just the giving of information, sending of a telegram, writing of a memo, or face-to-face conversation, rather it is the sending of a clear message and receiving and understanding the intent of the message.

Effective communication according to Fashoyin (1999) requires the continual dissemination of management's policies to workers and vice versa. Omolayole, as cited in Fashoyin (1999), stated that in the process of policy formation management must be prepared to see ideas flowing not only downwards but also upwards in a two-way communication system. Every educational institution thus needs to ensure that there is effective communication between those who manage the school and those who are charged

with the administrative and teaching tasks. In this way, communication becomes the “live-wire” of any human organization and will promote more effective management practices and greater trust between management and workers.

ESSENCE OF COMMUNICATION

Communication is important to an educational institution because it is the means through which messages, instructions and information are provided to staff and students and vice versa. Communication enhances organizational productivity, reduces conflict and leads to an effective teaching and learning environment. It can also lead to the realization of organizational goals. Hence, Lesiker in Peretomode (1991, 226) emphatically stated that:

Communication is the ingredient, which makes organization possible. It is the vehicle through which basic management/administrators functions are carried out. Managers and administrators direct through communication; they coordinate through communication and they staff, plan and control through communication. Hardly an action is taken in any organization without communication leading to it.

Communication between management and staff can increase their involvement in organizational activities, as well as, their commitment to the main objectives of the organization. As noted by Ezeocha (1989), a communication network is an important part of decision-making. In a simplified stimulus-response situation a message is sent out to the environment based on an expectation about how the environment behaves. When the environment responds, an adjustment can be made if any errors were detected in previous expectations. Communication thus enables people to attempt to create a commonness of understanding between them. Through communication, management can easily secure the agreement and commitment of staff and their representatives to the organization’s objectives, plans and policies. It is imperative for linking together different departments, programmes, activities and services in a school organization. According to Lesley (1978), information is not one-way and should not be conceived as a mere instrument of relaying orders from the management to “passive” workers. Rather, it is something that should be upward, downward and horizontal.

Admittedly, in any organizational setup good communication is essential for raising the level of employee motivation (Clark, Ross & Shackleton, 1993). In the absence of full and accurate information transmitted through formal channels, uncertainty and rumour may become widespread. Good communication can also significantly reduce feelings of neglect, disempowerment and alienation by increasing a sense of belonging and importance.

Communication is an important variable that determines healthy and cordial relationship in a school as it clarifies roles and duties and enhances industrial harmony. As such, administrators (Vice-chancellor, Provost, Rector, Principal, or Headmaster) must establish and maintain effective communication links with staff and students. Information for staff should be passed to them through unit heads to minimize the risk of workers receiving the wrong information or distorted messages. This also ensures that staff receive the information that is required to make good decisions in a timely manner.

THE SCHOOL MANAGER AND COMMUNICATION

As schools in Nigeria are in a constant state of expansion, communication has become particularly crucial in the control and coordination of groups, subgroups and individuals in the school system. Communication is essential to the school manager as it serves as an instrument to link management (decision centres) with the employees (often the executors of decisions). School managers should aim to maintain diverse information channels with employees to ensure harmony and instill a deep sense of belonging among workers (Iwambe, 2002). School managers should regularly disseminate information to share changes, progress and new developments in the school. According to Ezeocha (1989), members of the school (teachers, pupils, as well as the ancillary staff) need to know what the school is all about – its

purpose, aims and objectives. They also need to be aware of national and state educational policies and changes to these policies. He noted that the total effectiveness of any school system (as with other organizations) depends considerably on the extent to which members share and understand information.

Lucey in Obi (2004) identified a number of the tools used by managers to disseminate information to staff. These include face-to-face conversations, telephone calls, informal and formal meetings, conferences, memoranda, letters, report tabulations, posters and handbills. School managers must know when it is appropriate to use each of these channels or media. In the case of general staff meetings, for example, the managers and other major officers in the school are able to brief workers on various occurrences or new developments in the school. It should be noted that letters, memos, reports and notices meant for staff must be presented in clear language and devoid of jargon.

USING COMMUNICATION TO IMPROVE INDUSTRIAL HARMONY AND STAFF PERFORMANCE

Effective communication helps to promote harmonious relations between the school manager and staff and is critical to productivity in a school organization. An administrator best achieve these objectives by adopting the inverted triangular system of communication which brings management closer to the workers thus smoothing the relationship between the two and easing the decision-making process. Unachukwu (1997) goes further and argues for upward, downward, and lateral communication channels between the principal and subordinates. The principal should make him or herself accessible to teachers and students, delegate some functions to them, and actively pursue feedback. Unachukwu (1997) maintains that effective communication facilitates meaningful interaction and exchange of information or ideas among group members. Communication should be open and administrative functions coordinated harmoniously.

The free flow of information, according to Olagunju (1999), is an important factor in creating understanding in an organization. In his view, managers have a responsibility to ensure not only that they are understood but that they in turn understand other members of the organization. School managers can be well understood if they maintain a commitment to openness. Management should ensure that staff members are kept well informed about issues such as salary structure, conflict and dispute resolution procedures, safety, staff development and training, and so on. To prevent duplication of instructions, management should also ensure that all unit heads are fully aware of their areas of responsibility.

School managers must avoid denying access to information. Fashoyin (1999) maintains that many cases that lead to employee grievances are associated with poor communication in the labour-management relationship. This creates acrimony and distrust. Workers should not be denied information and management should not show lukewarm attitude towards information dissemination. Managers and/or administrators must be well versed in communication theory and practice if they are to enable employee access and understanding thereby promoting harmonious relationships between management and staff and among the staff themselves.

CONCLUSION

Effective communication is one of the basic ingredients in the effective operation of an organization given the propensity for periodic conflict in human relationships. Open and productive communication sets the stage for industrial harmony and the realization of the organization's objectives. An effective communication system is thus central to maintaining healthy work relationships among personnel. In order to ensure that communication does not pose any unnecessary challenges, a good organizational structure should be put in place. All staff and management should be instructed in the existing links of communication: who to report to, who to give instructions to, where to get what from and who is to be given what. Memos, emails, notice boards, telephone calls, circulars, and meetings all aid communication in the school organization.

In effect, wherever there is a need to organize, communication is a necessity; in a situation where effective communication ceases, organized behaviour also ceases and gives way to chaos which is antithetical to the achievement of organizational goals and objectives. As such, conscious efforts must to ensure that different audiences being communicated with are identified and that there is a consistency and clarity of messages so that receivers can come to place trust in the message and the sender. Achieving peaceful working relations between management and employees is, not surprisingly, a product of an effective communication network within the organization. It recognizes workers and their contributions as an integral part of the system, allowing and inviting them to participate in the decisions that affect their lives within that organization. It can make them feel capable, relevant and useful. The increased employee motivation gained as a result of good two-way communication will facilitate the achievement of common organizational objectives.

School managers must regularly communicate with both internal and external audiences and stakeholders. Theirs is often a job characterized by uncertainty and complex administrative issues that render clear communication all the more important. School managers must thus take regular account of what is to be communicated, who is responsible for communicating it, to whom the information is directed, and the most appropriate form in which to present it.

Recommendations

1. School administrators should encourage constant bottom-up communication, in addition to top-down communications, in order to know the perspectives of employees and to be able to seek and incorporate their input in decision-making.
2. School administrators should foster good interpersonal communication as this will not only discourage rumours, but create an atmosphere where feedback from the receiver of the message is welcomed and encouraged.
3. School administrators should encourage the use of a multi-channel communication system. This will go a long way to reducing conflict situations, feelings of insecurity, confusion and resentment among staff.

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Human Resource Development: Vocationalizing the Curriculum in Botswana

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Abstract

The primary objective of this paper is to explore avenues of curriculum reform that could lead to productive human capital development in Botswana. The paper is based on the presumption that an educated labor force is better at creating, implementing, and adopting new technologies, thereby generating growth. As the world becomes more of a global village, the careful development of human resources to remain competitive cannot be overemphasized. Traditional understandings of training, with long training cycles, are becoming less and less applicable. The paper discusses the notion that the world of work has undergone profound transformation and that new ways of production have emerged leading to calls for a new kind of worker.

Keywords: Human Capital, Vocational Training, Tertiary Education Council, Botswana Training Authority, Global Village.

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INTRODUCTION

In higher education circles, hardly a day passes without mention of the word 'graduate employability'. Institutions are being urged from all quarters to ensure that their products are people employers would be eager to employ. Tabulawa (2009) observes that while unemployment is a problem in Botswana, there are vacant posts in the job market employers are finding it difficult to fill. They advertise, shortlist and interview people with the right qualifications, but do not find those people to be suitable for the posts. Where graduates are deemed unsuitable for posts in the job market, it points to a mismatch between what the labour market wants and what education institutions emphasize in their programmes. The University of Botswana has reported significant mismatches of supply and demand in the labor market and the job placement ratio is cause for concern. This is where pre-vocational training becomes crucial in that it is responsive and sensitive to the demands of the labour market.

According to Lekoko (2008), the problem of educated unemployment is gradually growing in Botswana and those critical of the education systems attribute this to curricula that aims to foster a globally competitive workforce and fails to equip learners with employment skills suited to their local environments. For a long time, Botswana's educational landscape has been purely academic, with limited practical applicability to the world of work; so much so that when learners complete their studies, they find the workplace to be a totally new and different place. Graduates are taught to think, interpret and produce abstract knowledge but are unable to apply it in a real world work place. Based on its presumed benefits, formal education was made (and continues to be) a massive priority in Botswana, however, instead of it opening up a wider world of opportunities, particularly employment opportunities, the opposite has been true for some.

According to Kouwenhoven (2003), in developing countries many higher education institutions are experiencing a growing gap between their curricula and the demands of society, business and industry for a more flexible workforce with high skills (competencies) in problem solving, team work and project management. The present analysis seeks to better understand the problem of unemployment in Botswana, mismatches of supply and demand in the labor market, the job placement ratio, and the growth of educated unemployment. It examines the observation that Botswana curricula failed to live up to its presumed benefits and that the current education system divorces the world of work from the world of learning. Van Rensburg (2001) contends, in fact, that the formal system of education, to which the hopes of so many have been pinned, has failed the great majority of people. The content of education is such that it does not prepare people to participate in economic life. This analysis further intends to explore avenues of curriculum reform that will lead to productive human capital development in Botswana. This paper is based on the presumption that an educated labor force is better at creating, implementing, and adopting new technologies, and thereby generating growth.

HUMAN CAPITAL CONCEPTUALIZATION

Preece and Mosweunyane (2003) note that human capital relates to skills training and information about how to use existing resources effectively. This is echoed by Massachusetts Institute of Technology economist Thurow (1992) who sees human capital, or education, skill levels, and problem-solving abilities, as prerequisites for enabling an individual to be a productive worker in the twenty-first century global economy. The presumption is that an educated labor force is better at creating, implementing, and adopting new technologies, and thereby generating growth. Nelson and Phelps (1966) pointed out that human capital accumulation has long been stressed as a prerequisite for economic growth.

They further revealed that human capital levels affect the speed of technological catch-up and diffusion. The ability of a nation to adopt and implement new technology from abroad is a function of its domestic human capital stock. Romer (1990) postulates that human capital may directly influence

productivity by determining the capacity of nations to innovate new technologies suited to domestic production. The country with the highest stock of human capital will eventually emerge as the technological leader and maintain its leadership as long as its human capital advantage is sustained.

The Role of Curriculum in Educational Development

Farrant (1991) defines curriculum as that which the student is supposed to encounter, study, practice and master. Curriculum is a set of decisions about what is taught and how it is taught, which determine the general framework within which lessons are planned and learning takes place. Curriculum may refer to a defined and prescribed course of studies, which students must fulfill in order to pass a certain level of education, its entire sum of lessons and teachings designed to improve national testing scores or help students learn the basics. A curriculum is prescriptive, and is based on a general syllabus which specifies what topics must be understood and to what level to achieve a particular grade or standard.

Russell (1997) indicates that in a knowledge-based era of economic development, education as the fountainhead of knowledge has assumed added importance. In fact, education works as a driving force in the development of a country and brings much-needed intellectual capital and technological changes, making the economy more competitive and innovative. Knowledge and technology, being the intrinsic components of education, have emerged as integral parts of the economic system of developed economies. The major economies of today, including the US, China, Japan, Russia and other emerging economies owe a great deal to high skill and education levels. The key driver of growth is human capital, which, taking advantage of the information revolution and fast and efficient electronic communication, has accelerated the process of production and raised the volume of global trade beyond all expectations.

CONTEXTUALIZATION

International Context

As noted by Thurow in his proactive study *Head-to Head: The Coming Economic Battle among Japan, Europe, and America* (1992), in the first twenty five years after World War II the global economy was characterized by niche competition. “The United States,” according to Thurow, “exported agricultural products foreign competitors did not grow, raw materials they did not have and high-tech products they could not build”. High wage products in Germany and Japan were low-wage products in America and imports to America from these countries did not threaten jobs. In these years, America was the world leader in terms of its economic output. In the late 1940s, America’s Gross Domestic Product (GDP) represented half of the worlds, and per capita GDP was four times that of West Germany and fifteen times that of Japan.

Today, the tables have turned and Asia now leads the pack. Thurow indicates that by the late 1980’s, America’s share of the world’s economy had fallen by half, and in 1990, Japan’s per capita GDP was slightly higher than America’s. America lost its dominance in steel and machine tools, chemicals and autos, and television and consumer electronics production. This is in part because of increased investment in the quality of human capital stocks in Asian countries.

Hershburg (1996) observes that, in his 1996 State of the Union Address, President Clinton cited the need for K-12 schools to adopt rigorous academic standards as one of the six challenges facing America. Soon afterwards, 41 of the nation's Governors and 49 corporate leaders met at the National Education Summit, hosted by IBM, and agreed that standards and assessments were the number one priority. In a similar way the time has come to ask what kind of workers Botswana has now and must have in the future. What kind of qualities must workers have if companies are to succeed in product and process technologies? What kind of employees do high performance work organizations need to succeed without layers of middle

management? Research suggests that they will have to be flexible, adaptable, quick learners and problem solvers. Are those the kind of skills being developed by our education and training system?

Botswana Context

In examining Botswana's education and vocational training system, it is clear that curriculum is subject-based and dichotomous, that is, theory is separated from practice. The government has tried to infuse practical subjects into the curriculum, however, it has been noted that these practical subjects are still taught abstractly. Education commission reports (Education for Kagisano: Report of the National Commission on Education, 1977; Revised National Policy on Education Report, 1994) also point to evidence that more prominence is accorded academic education. When one has failed in their academic education, he or she then enrolls in vocational education, offered by Brigades and Vocational Training Centres, as a second choice. This education in turn is limited to the acquisition of manual skills and does not include competency skills that nurture an adaptable worker and are required by the rapid changes in today's labour market. Increasingly in countries around the world, practical and vocational studies are no longer thought of as subordinate to general education. In the new school, it is argued, work and education must meet on equal terms. Consequently, the search is on for new ways to combine theory, practice and production in an interactive and dynamic pedagogy.

The government of Botswana continues to seek ways to maximize training opportunities. The government recently established the Tertiary Education Council (TEC) and Botswana Training Authority (BOTA). The development of standards, qualifications and curriculum for the vocational training system, as well as registration and accreditation with quality assurance institutions, was enhanced. The Vocational Training Fund (VTF) was created as an incentive by the government to assist companies in upgrading employee's skills. Consensus seems to be that the fund is under-utilized and very few companies have heeded the call to contribute to it. At present, TEC and BOTA are being merged to spearhead tertiary education and vocational training as a single entity.

A recent TEC (2005) consultation paper highlights fragmentation, a system that is characterized by multiple accountabilities and that is ambiguously defined, lacks coherence and strategic direction, as a defining characteristic of vocational education in Botswana. Overlaps between the Tertiary Education Council and the Botswana Training Authority were cited frequently as were the number of tertiary institutions being separately run by various Government Ministries with little or no high level co-ordination. The present training system is characterized by the absence of a proper mechanism for the financing of training, which is almost entirely dependent on the government. Currently there is also a National Human Resources Development Strategy, which sets out the broad macro-level human resource goals for the country, a Tertiary Education Policy, which provides guidelines on how tertiary education should meet human capital development goals, and a Botswana National Qualification Framework.

According to the Government of Botswana's 10th Biennial Report (2006), Botswana embarked on a number of projects, including the expansion of the University of Botswana and a review of its governance and management structures in order to respond to global and local changes in higher education. The capacity of the Institute of Health Sciences was increased in terms of infrastructure, human resources, intake, and programmes. The government also established a new medical school, the Oodi and Selebi Phikwe Colleges of Applied Arts and Technology, and Francistown College of Technical and Vocational Education. Botswana International University of Science and Technology (BIUST) is being established to increase access to tertiary education and to facilitate development of skills and competencies that will promote research and innovation. BIUST will seek to partner with industry, as well as local and international institutions to facilitate exchange programmes and work placements to ensure relevance to the world of work for both staff and students. These major projects are expected to go a long way in building the human resources required to meet the challenges of the 21st century and beyond.

Justification for the Need of Pre-Vocational Training

With the world becoming more of a global village, the importance of developing competitive human resources cannot be understated. Training in the traditional way, with long training cycles is less and less effective. Systems have to be put in place to promote continuous learning and to keep the workplace up-to-date on the latest technology and techniques. The pace at which knowledge and skill are becoming obsolete, however, points to the need for the establishment of a life-long learning culture. Such a feat cannot be achieved by social partner, government, employer or worker alone. A strong partnership will go a long way towards avoiding wastage in training and making sure that training is demand-driven in line with the needs of business and industry. To date, the government remains committed to investments to improve access to pre-school education, the provision of ten years of basic education for all, increased access to senior secondary education, the expansion of vocational and technical training and the promotion of life-long learning.

In general, public tertiary education institutions have been slow to respond to changes in the labor market, have failed to establish linkages with the market, and have not responded sufficiently to improve the employability of graduates through curricula adaptation and quality improvement. Indications from employers also suggest that while many of the graduates entering the labor market are sufficient in terms of specialist knowledge, they lack critical analysis skills. Private institutions have been more responsive to labor market demands, and when certain employers required certain types of skills, have been quick to devise new programmes. However, as noted below, many of these institutions are far from being well established and are largely disconnected from the core developments of the country's tertiary education system.

It is important that vocational education and training improve its responsiveness to rapid changes in demand for skills development, that it address skills shortages, especially in traditional trades and emerging industries, and that it deliver improved outcomes for employers, individuals and communities. Employers are seeking a national training system that offers more choice and flexibility, graduates with improved skills outcomes, training packages which deliver graduates the right skills sets, and opportunities for businesses to engage directly with training providers. Addressing these key issues will give rise to an industry that has a highly skilled workforce able to support strong performances in the global economy. This, in turn, will address challenges related to an ageing population, increased global competition, changing industry needs and potential skills shortages.

If Botswana's economy is to operate near full capacity, government policies will need to focus on human resource skills development, given the positive link between education and workforce participation and productivity. Moreover, those with higher level education are generally more employable and able to earn higher wages than those without.

On a positive note, in a local Mmegi newspaper, dated 21st October 2011, the Department of Curriculum Development and Evaluation is said to be reviewing the curriculum, which has not been reconsidered since its inception in 1996. The Department contends that the current curriculum prepares students to pass examinations, rather than instilling sustainable practical skills that broaden opportunities after basic education. The curriculum is unable to unleash learner's potential because it is exam-oriented. Besides lacking practical/vocational components, the syllabi are found to be congested, and of limited flexibility in turn hindering learners ability to make subject choices in line with their career interests.

An evaluation of Botswana's General Certificate of Secondary Education commenced in 2008 and was undertaken by the University of Botswana, Cambridge and a team of curriculum development officers. The new programme that will be operational in 2013 is comprised of four learning areas: Core, Options, Electives, and Basic Life Skills. The Department argues that these changes will help to develop an enterprising culture and creating awareness of the centrality of economic and financial literacy.

DISCUSSIONS

This paper contributes to the understanding of how vocationalizing the curriculum can enhance the human capital accumulation necessary for economic growth. It is clear from this review that Botswana's curriculum is subject-based and dichotomous and theory is separated from practice. Lekoko (2008) points out that Botswana has relied exclusively on one knowledge system, formal education, to prepare individuals for the world of work. This is so because of the emphasis on the formal employment sector for which formal schools are considered the best and only means of providing education and training. Unfortunately, this type of education has its shortcomings and graduates often lack skills needed for the world of work. Graduates do not fit easily into the development activities of the country and the courses that are taught are not relevant to the requirements of the productive sector.

It would be important, then, to pay more attention to match what the labor market needs and what education institutions emphasize in their programming. This mismatch between the school system and industry presents an enormous national challenge. The significant and relevant vocationalization of the curriculum will be fundamental to addressing this challenge. Curriculum should be designed to build specific critical thinking skills that are now considered weak or lacking among graduates. While a variety of specific content areas are addressed in academic disciplines, the primary emphasis should be on skill development. While content topics are important in building student interest, skill development is foundational to the future success of graduates.

Another issue that needs to be considered is the fact that a working partnership between industry and the education sector is absent during curriculum development. Curriculum is a result of a complex process involving a variety of actors. Traditionally, the subject matter has been determined by educators who, taking social or private values into account lay out the syllabi and number of periods each subject should be taught. It is imperative that policy-makers and educators develop curricula in partnership with industry. Stakeholder forums should be a prominent feature of the laying out of subject matter. A wholesale rethink of curricula is required as many programmes are still entrenched in the traditional development paradigm and industry partnerships and input will be helpful in this regard.

It is critical that policy-makers, educators and industry fully understand the potential strategic pay off of the investment made in the training and development. Vocationalizing the curriculum will always have its challenges, but if it is to be viable it will require the provision of adequate equipment and materials and operations such that they can be maintained and replaced. There is also need to provide professional training for vocational educators to enhance their instructional quality.

CONCLUSIONS

This analysis has surveyed the gap that exists between industry and the education sector. This lack of cohesion has led to a surplus of educated unemployed people and, at the same time, shortages of skilled personnel. Human capital development through education must be given greater priority by the government so that the country does not continue to depend on expatriate skilled labor for its development. We do, of course, stand to benefit in many ways from the skilled services of those from other friendly nations. Until we have adequate human resources of our own, these will continue to be vital to our development. However, our future as a nation lies in training our own skilled workforce and moving towards self-reliance. We must therefore begin to expand and enhance our vocational education and training and plan for our own development.

Recommendations

- Curricula should equip students with the relevant productive and occupational skills that will enable them to enter into gainful employment.
- Curricula should be restructured to integrate both the academic and practical towards proving trained human resources to meet industry demand.
- Educators and curriculum reformers should engage all key stakeholders (including industry) in the developmental to the implementation stage of integrated academic and practical curricula.
- Vocationalization can be achieved through greater local flexibility, better teaching facilities and equipment, and the provision of more technical assistance
- There is a need to increase the attractiveness of vocational education in schools by increasing the numbers of qualified facilitators through the provision of professional development.

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Mathematics in Contemporary Societies: An Effective Tool for Achieving the Vision 20:2020 Agenda

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Abstract

The value of mathematics to individuals and societies has, through the years, been well explored and documented. Mathematics boasts direct benefits to individuals and groups as well as scientific and technological spinoffs that better larger society. This paper examines Vision 20:2020, mathematics, and ways in which mathematics can foster the development of individuals and groups and its attendant effect on society at large. This paper highlights the suitability of mathematics as an effective tool for achieving Vision 20:2020. Finally, this paper suggests a number of next steps that will help to develop mathematics so as to achieve the nation's economic, scientific and technological goals.

Keywords: Mathematics, Vision 20:2020, Society, Development.

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INTRODUCTION

Both the International Monetary Fund (IMF) and United Nations (UN) provide a ranking of world economies as measured by Gross Domestic Product (GDP). In the IMF ranking, Nigeria occupies the 31st position and in the UN ranking, it comes in at 30th. According to the United Nations Development Assistance Framework 2009-2012 (2008), in the world economy Nigeria ranks 40th based on its GDP. Owing to good fiscal policy, a concerted fight against corruption, and growth in democracy over the last three years, Nigeria has moved nine places upwards in such rankings (Mordi, 2012). As noted by Mordi (2012), development in education (including science, technology and mathematics education) is listed by Goldman Sachs as an important stimulus for economic growth. Current government policies aimed at further reducing corruption and encouraging openness in trade must be accompanied by effective Science, Technology and Mathematics (STM) education if the country is to achieve Vision 20:2020. There is growing evidence of a correlation between global rankings in STM achievement and world economy rankings. As reported in The Guardian (2010), the world's ten largest economies have the following rankings in STM achievement:

Table 1: First Ten World Economies

Economy By Size	Rank in Achievement of STM
US	20 th
China	1 st
Japan	11 th
India	Not available
Germany	23 rd
Russia	46 th
Brazil	56 th
UK	28 th
France	25 th
Italy	32 nd

World Ranking in STM Achievement. Source: The Guardian (2010)

Nigeria did not rank among the ten largest economies as listed above. There is an urgent need for mathematics to assume a more central role in economic and technological development given its widespread application in all areas of science, technology, industry and commerce. As noted by Osafehinti (1990) and Aminu (1995), a society that aspires to be scientifically, technologically (and economically) developed must have an adequate level of mathematics education since math is the ingredient for the effective articulation of the abstract elements of science that give impetus to the development of new technologies. Given this and the nation’s aspiration to become one of the 20 largest economies in the world by 2020, that is, eight years from now, it is more important than ever to explore the knowledge and skills that can be provided as a result of mathematics education across Nigeria.

With the above remarks in mind, this paper examines Nigeria’s Vision 20:2020, mathematics, and the suitability of mathematics as an effective tool for achieving Vision 20:2020. This paper also highlights a number of steps that will help to develop mathematics so as to achieve the economic, scientific and technological developments required by Nigeria Vision 20:2020.

NIGERIA VISION 20:2020

Nigeria Vision 20:2020 (NV20:2020) is Nigeria’s long term development goal designed to propel the country into the top 20 world economies by 2020. NV20:2020 is a national effort aimed at growing and developing Nigeria, Africa’s most populous nation and bringing it into the league of the world’s best performing, and well-developed, economies (FRN, 2010). According to Bolarin (2010), NV20:2020 can be seen as a perspective plan: NV20:2020 has to do with awareness of Nigeria’s potential to become one of the 20 largest economies based on its abundant human and natural resources. NV20:20 is a laudable and ambitious programme, given Nigeria’s current status as a third world country. The Federal Republic of Nigeria acknowledged that attainment of the vision would enable the country to achieve a higher standard of living for its citizen. The NV20:2020 was developed by Nigerians for Nigerians and involved a process of thorough engagement with stakeholders across all levels of government and society. The vision is thus a rallying point for Nigerians, regardless of ethnicity, political leaning, economic status or religion and speaks to a desire to place the country on a sustainable development path and enable it to play a greater role in the comity of nations. The two broad objectives of NV20:2020 are to:

- Make efficient use of human and natural resources to achieve rapid economic growth;
- Translate this economic growth into equitable social development for all citizens.

The success of the programme will be measured by its ability to meet the following key parameters set by government:

- **Macro-Economy:** A sound, stable and globally competitive economy with a GDP of not less than \$900 billion and a per capita income of not less than \$400 per annum.
- **Agriculture:** A modern technologically-enabled agricultural sector that fully exploits the vast agricultural resources of the country, ensures national food security, and contributes to foreign exchange earnings.
- **Health:** A health sector that supports and sustains life expectancy of not less 70 years and reduces to the barest minimum the burden of infections and other debilitating diseases.
- **Education:** A modern and vibrant education system that provides the opportunity for maximizing potentials, and adequate and competent manpower.
- **Infrastructure:** Adequate infrastructure services that support the full mobilization of all economic sectors.
- **Manufacturing:** A vibrant and globally competitive manufacturing sector that contributes significantly to GDP with a manufacturing value added of not less than 40%.

MATHEMATICS DEFINED

Mathematics is the language of science, an essential ingredient in thought, logic, reasoning and therefore progress (Aminu, 2005). Obodo (2000) presents mathematics as a language that uses carefully defined terms and concise symbolic representations which add precision to communication. According to him, the language of mathematics is systems of sounds, words and patterns which are frequently used in communicating mathematical ideas and other related materials. Aminu (2005) views mathematics as the study of numbers and numeration systems, symbolic language, shapes, sizes and spaces, patterns, and the science of shapes, sizes, spaces, generalization, measurements and relationships. In effect, mathematics is a functional tool needed in every aspect of life and work. The functional role of mathematics to science, technology and national development is, according to Kurumeh (2007), so multifaceted that no nation can advance scientifically and technologically without mathematics. The industrial and technological development of any country thus rests on its ability to utilize the knowledge of mathematics (Odiri, 2006).

MATHEMATICS IN CONTEMPORARY SOCIETIES

Mathematics is no longer confined to being just an abstract subject; rather it has transcended the boundaries of solving scientific problems, designing industrial projects and facilitating business transactions. The role of mathematics in contemporary societies includes, but is not limited to, architectural design, bridge, dam and highway construction, and the description of various phenomena both in physical and economic situations through the use of concepts like shapes, sizes and quantity. Other areas of usefulness include the art/social sciences, religion, mysticism, commerce, war, information and communication technology, sports and pastoral life. According to Obodo and Harbour-Peter (1988), technological development is impossible without mathematics. Obodo and Harbour-Peter also contend that mathematics encourages the cultivation and practice of science virtues such as prudence, diligence, justice, patience, perseverance, cooperation, patriotism, objectivity and honesty. Adetula (1986) avers that mathematics is pervasive in today's world and is vital to an individual's meaningful and productive life. Further, outstanding ability in the subject should be seen as a precious societal resource critical to maintaining leadership in a scientific and technological world.

Given that mathematics is central to economic, scientific, technological, and societal development, it is worth examining some specific areas where math will positively affect the achievement of Nigeria Vision 20:2020. Among these are:

1. **Science and Technology:** Mathematics is the foundation of science and technology. It is required in integrated science as well as in Physics, Chemistry, Biology, and Engineering. Scientific knowledge is fundamental to addressing the critical issues of economic transformation and globalization, unemployment, poverty, hunger, disease and the sustainable use of national

resources. Mathematics is an indispensable tool for the transforming technological developments into reality as technology development represents the expansion and improvement in goods and services emanating from the practical application of science.

2. **Medicine:** Mathematics is also central to medicine. Functional numeracy is as essential to an aspiring medical professional as functional literacy. Mathematics skills needed in medicine include basic mathematical knowledge sufficient to calculate drug doses and concentrations, an understanding of the core statistical concepts most commonly represented in the medical literature, an understanding of algebra to ascertain calculations of acid-base status, and an ability to appreciate whether or not results are mathematically plausible. The logical reasoning required for the study of mathematics is an essential component of clinical reasoning.
3. **Economy:** Nigeria's economy is highly dependent on earnings from the sale of crude oil which accounts for 77% of government revenue and 95% of the country's foreign exchange earnings. Crude oil production is estimated in millions of barrels/day and is worth billions. The growth rate of real income per capital averaged uses percentages for calculation. The Gross Domestic Product (GDP), a primary indicator of the economic health of a country, is obtained by dividing the total naira value of all goods and services produced over a specific period of time. Decision making, budgetary allocations, fiscal policies and planning, and the equitable distribution of goods and services in different zones of the country all depend on statistical parameters and inferences.
4. **Agriculture:** Agriculture provides a country with the food essential for its nutritional development. The number of crops to be planted and the amount of fertilizer to be used in ratio are estimated using numbers. The planting of root and tree crops involves knowing the dimensions and spacing between each crop and the number of crops and required plots for proper propagation are mathematically calculated and depend on mathematical knowledge.
5. **Banking Sector:** The banking system plays the important role of promoting economic growth and development through the process of financial intermediation and is the conduit for the implementation of monetary policy. Banks play a central development role in every economy by mobilizing resources for productive investment. Transactions in banks occur with money but money is valued, counted and recorded using numbers. Bank transactions, including stocks, bonds and asset bases, are recorded using mathematics. Daily, monthly, and quarterly transactions are prepared with applications from profit and loss, percentages and higher arithmetic.
6. **Everyday life:** In everyday life, mathematics is central to the well being of our day-to-day activities. We use it in determining when we will wake up (time), how much we will spend throughout the day and how much our daily/weekly/monthly expenses will consume. We consider how many people are our dependents and use ratios to share money to them according to age, need, size or priority. At school/work, we check our work load and project a percentage of accomplishment that will give us a satisfactory pass mark. We consider weather reports that meteorologists have used mathematics to deduce to determine if we need to take umbrella or if it will be best to stay at home. We use computers that are founded on the principles of abacus and binary operation (0, 1) and mobile phones that are a result of mathematics via technology. At the end of the day, we assess the percentage of accomplishment for that day.
7. **Cryptography:** Cryptography is the study of hiding information for creating codes for, for example, Automated Teller Machines (ATMs) and debit and credit cards. ATM cards use numerical pins that give access to an account wherever it may be. Since the inception of ATM cards in Nigeria, banking transactions have been less stressful. With a simple four-number pin code, transactions ranging from daily banking, money transfers, and utility payments to mobile phone recharge cards can handled outside of banks. Cryptography is indispensable to safety in modern communications (Abubakar, Wokoma & Afebuame, 2011, pp. 54–63).

MATHEMATICS CURRICULUM IN NIGERIA

The mathematics curriculum currently in use in our schools has tended to concentrate too much on content. The issue of relevance and appropriateness, as derived from individual interest, ability and future vocation, is generally not addressed. Moreover, the curriculum in its present form is overloaded and is

rightly criticized for exclusiveness. Both the curriculum and the examination system offer only a school qualification which is hardly valued today by employers and society. The existing mathematics curriculum must be reviewed to enable mathematics students to acquire more knowledge of the application of mathematics to both societal need and self-reliance after graduation. The curriculum should be such that mathematics graduates do not end up only as teachers, but are able to render services to humanity and the community. Such services may involve the direct and indirect use of mathematics in solving problems (Eze, 2007). According to Eze (2007), the curriculum should expose mathematics students to at least one of computer programming, quantity surveying, design, actuarial science, accounting, or financial studies and planning. Osunde (1988) noted that the curriculum should prepare students for useful living which may be synonymous with the concept of self-reliance. A curriculum that prepares individuals for self-reliance or useful living must include some practical activities.

DEVELOPING AND RETRAINING MATHEMATICS TEACHERS

The National Educational Research Council (NERC) task force in mathematics (1977) in its report on problems among teachers stated that the quality of teacher preparation in our colleges is poor. Further, the status of teachers in our society is low and consequently the majority entering the profession does so because they have failed to obtain employment or training for more prestigious positions. To better meet the needs of mathematics education, teaching should be professionalized. Poor teaching methods have been identified as one of the factors causing poor performance among mathematics students in schools and discouraging them from pursuing mathematics in higher degree programmes (Eze, 2007). In addition to teaching challenges, there is a shortage of qualified tutors in both mathematics and methodology in Nigerian secondary schools.

These are among the reasons that the Mathematical Association of Nigeria (MAN) has begun to organize workshops for mathematics teachers in the primary, secondary and tertiary levels of education on how to teach the subject as well as on its presentation to students so as to enhance student performance. The National Mathematical Centre, Abuja, should continue to organize workshops aimed at retraining teachers in schools. This retraining and efforts to ensure that they have adequate teaching qualifications will aid in the production of mathematicians with better knowledge of mathematics and its applications. These mathematicians will, in turn, be better able to contribute meaningfully to the development of the economy and society (Eze, 2007).

TEACHING FACILITIES AND AIDS IN MATHEMATICS

There is an acute shortage of teaching facilities, textbooks, construction kits, pictures, graphs and charts for teaching mathematics in our schools. Teachers must depend on few textbooks, chalkboard, and chalk while students can depend only on the lesson notes given to them by teachers and the few textbooks. Ihebereme (2009) remarked that instructional aids needed for effective teaching are either lacking or grossly inadequate. In the midst of this inadequate provision of instructional aids, teachers seem to worsen the situation with a nonchalant attitude towards making improvised instructional materials. Ogwo (2004) posited that improvisation is the panacea for continued effective instruction and the realization of instructional objectives. Thus, to produce mathematicians for the 21st century, better facilities and reader-friendly textbooks should be made available to both teachers and students. The textbooks should expose students to the application of the topics covered and should be able to sustain the interest of the reader (Eze, 2007). Instructional materials including textbooks, construction kits, pictures, graphs and charts must be used extensively to make mathematics concepts real to students. The government, federal, state and local, should be ready to supply these required materials to schools (Okonta, 2009).

ADEQUATE FUNDING FOR MATHEMATICS EDUCATION

Funding problems are central to the effective teaching of mathematics in our schools. According to Okebukola (1995), inappropriate funding, poor teacher training/welfare, the shortage of instructional materials, a diminishing regard for the value of education, social decadence and political instability are

among the greatest barriers to the effective teaching of mathematics and science in Nigeria. Among developing countries, Nigeria has one of the lowest levels of expenditure on science, technology and mathematics research (Okafor, 2000). Inadequate funding affects the provision of facilities and the recruitment of the desired faculty to implement the curriculum. This, in turn, affects the level of quality obtainable. There are many schools that still do not have science equipment and facilities for the proper teaching and learning of science, technology and mathematics. The Science Teachers Association of Nigeria (STAN) in Iyobhebhe (2002) has observed that:

- Teaching-learning resources are grossly inadequate for communicating science, technology and mathematics (STM) in our schools; and
- The lack of adequate incentives for science teachers is a very serious barrier to effective STM teaching in Nigeria.

Adequate funding can also allow for the provision of bursaries and scholarships to students in mathematics education. This is likely to greatly improve teacher and student interest in this subject, thereby enhancing tertiary enrolment in this area. Mathematics teachers should be regularly encouraged to help them develop a greater commitment to their responsibilities.

EFFECTIVE PEDAGOGY IN MATHEMATICS EDUCATION

Pedagogical knowledge is specific knowledge about learning and teaching processes. This knowledge is vital in ensuring that content knowledge is transmitted to learners in ways that ensure that effective learning really takes place. Effective teaching involves three different types of knowledge. These are content knowledge, pedagogical knowledge and pedagogical-content knowledge. A teacher's content knowledge is his or her specialist subject matter knowledge. Pedagogical-content knowledge refers to the specialist teaching and learning knowledge that teachers develop while teaching their own specialist subject matter. Proficiency or expertise in teaching, recognized as important in promoting superior learning (Cornford & Athanason, in Iyobhebhe, 2002) can only be attained by mastering of these three types of learning. It is unlikely that Nigerian mathematics teachers have had enough time during their training to master these skills.

Mathematics education, being naturally activity-centred, would be an interesting area of study, were it not for the inappropriate teaching methods adopted by most teachers. These inappropriate methods such as lecture and exposition have scared away many prospective mathematics education students, even in primary and secondary schools. Teachers of mathematics education at all levels of education should therefore embrace the integrative approach to teaching. This approach, which should be both child and activity-centred, includes practical demonstrations, field trips, and the inquiry approach. All of these strategies are essential means for motivating learners to further study mathematics based courses in tertiary institutions.

MATHEMATICS: THE KEY TO NIGERIA VISION 20:2020

The present political dispensation has drawn up a roadmap to render Nigeria among the world's twenty largest economies by the year 2020. Mathematics is essential to the attainment of this vision. Pakes & Sokolof (1996) note that from the beginning, training in science, technology and mathematics is needed to produce scientists, technologists to create machines, and manned industrial processes that will convert vast natural resources into useful products. In fact, mathematics plays a pertinent social and economic role as a result of its widespread application in all areas of science, technology, industry and commerce. Having highlighted the immeasurable role of mathematics in ensuring the development of society, it is the view of the author that mathematics can be effectively used as a tool for achieving Nigeria's Vision 20:2020 agenda. This is more likely to occur if the recommendations listed below are implemented.

CONCLUSION

The value of mathematics in contemporary societies cannot be overemphasized. Mathematics has supported the realization of considerable technological developments and modern scientific breakthroughs. Ranging from the use of simple procedures to the application of complex solutions, mathematics today is applied in all aspects of practical science and technology. Most science education programmes, which make up the framework for technology, are replete with the use of mathematical methods. A building in a well-planned city, for example, first has to be designed, using math, after the land on which it is to be built has been properly surveyed, using math, and its topography understood and proper allowances made to ensure a durable structure, again using math.

In recognition of the role of mathematics and the need to improve the quality of teaching and learning of the subject, the Mathematics Association of Nigeria (MAN) initiated a mathematics improvement project intended to improve mathematics teaching in our schools. MAN better outlined how to teach the subject as well as how to present it to students in order to enhance their interest and performance. The Science Teachers Association of Nigeria (STAN) has also made efforts to diagnose the problems plaguing science, technology and mathematics in Nigeria over the past two decades. Although various workshops, projects and programmes have been initiated as a result of these efforts, the success of these programmes has been minimal due to poor (and ingrained) teaching methods, inadequate teacher qualifications, rote learning, and overcrowded classrooms all of which have a negative effect on student achievement in mathematics.

In addition, students are exposed to curriculum that is far more theoretical than practical. Most times students find themselves memorizing mathematics formulas for the purpose of passing mathematics examinations. Students find it difficult to conceptualize the topics being taught, let alone think about their application. Most mathematics teachers come with little or no training in the pedagogy of teaching. The result is that they (teachers) teach and students often find it difficult to understand. Students succumb to simply making notes and struggling to memorize formulas for examinations. Mathematics pedagogy needs a considerable boost in order to overcome the challenges of persistent poor performance. Lastly, there is an acute shortage of teaching materials in our schools. Textbooks, construction kits, pictures, graphs and charts for mathematics are in short supply.

Recommendations

1. The existing mathematics curriculum should be reviewed to enable mathematics students to acquire a better understanding of the application of mathematics relevant to societal need. Nigeria needs a mathematics curriculum that addresses the needs of its society.
2. There is a need for the massive development and retraining of mathematics teachers through workshops so as to produce mathematicians with better knowledge of mathematics and its application in the development of the economy, science, technology and society in general.
3. There is a need for the adequate provision of mathematics teaching aids and facilities.
4. Nigeria must work towards the massive development of mathematics education through adequate funding and the provision of better and reader friendly textbooks to teachers and students.
5. Nigeria must also improve interest in mathematics through more effective pedagogy. To this end, mathematics teachers must use constructivist pedagogy in mathematics teaching and learning.

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Challenges in Academic Records Management in Tertiary Institutions in Ghana

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Abstract

The study seeks to examine challenges associated with academic records management in tertiary institutions in Ghana. This study aims to examine internal policies related to academic recordkeeping, records management practices, technology used for keeping student academic records, and the challenges institutions face in managing student records. A stratified sampling technique was used to sample 1990 respondents from public and private universities, polytechnics, and nursing and teacher training colleges. Questionnaires were used to gather data. Both descriptive and inferential statistics were used to analyse the findings of the study. This study found a significant association between the type of institution and policies for managing student academic records. This was attributed to differences in the mandate and focuses of the various categories of tertiary institutions. The adoption of internal policies is critical for controlling irregularities in record keeping in tertiary institutions. There was no significant association between the type of institution and practices to control indecencies in academic record management. This may be attributed to the ability of institutions to adopt the practices they prefer to address record security challenges. There was a significant association between the type of institution and the kind of technologies adopted to manage records keeping systems. In general, public tertiary institutions lack the logistical support required to effectively manage electronic records. Virus infection was a major threat to electronic records keeping in tertiary institutions.

Keywords: Academic records, Academic records management, Academic records systems, Records management technology, Life cycle concept, Continuum model.

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INTRODUCTION

Records management has become one of the most difficult tasks associated with educational service delivery. This, according to Shurville, Browne and Whitaker (2008), is due to the poor management of accurate, reliable and trustworthy records so as to fulfill evidential requirements. As noted by the National Archives of Australia (2002), student academic records must endure and remain trustworthy for a long time, sometimes permanently. Many administrative heads of academic institutions complain of a lack of funds and material resources for records keeping. The reality also reveals a gross inadequacy of qualified personnel and facilities, complications introduced by a burgeoning student population and space challenges (Attwood & Gill, 2008).

Consequently, many tertiary institutions in Ghana have become preoccupied with measures to maintain more efficient and credible student academic records. This search has been further complicated by the technological requirements and pace of the current digital age. The need for a record management system that can better address data security challenges and enhance the credibility and sustainability of student academic records has led to the adoption of several institutional records management policies. In some cases, such policies have in turn led to the adoption of innovative processes for managing student academic records. These include paper recordkeeping, electronic recordkeeping, and a hybrid of both paper and electronic record keeping systems. The successful implementation of any educational policy, however, depends on the process for its initiation, a supportive technological environment as well as the human capacity needed to manage such technologies. In other words, any educational policy that does not emanate from a rational process, does not have the requisite technological support or does not have the human capacity to manage the process is likely to fail.

Records management is a necessary part of the work of almost all employees within an educational institution including individuals in their personal lives. The importance of records management is highlighted by the need for evidential proof of activities in account or dispute. Organizations and individuals thus cannot afford to downplay the art of proper records management systems. Every record has a life cycle, as explained in the theoretical foundation section below. This starts with the proper capturing of data, the creation of records, retention of records, and final disposition of records, all of which must be properly managed. In the context of best practices, improperly capturing data can render the entire record unauthentic and unacceptable when relevant questions arise. The adequate management of records in any business environment should thus provide:

- Proof of originality
- Proof of compliance of data capturing and
- Proof of retention or disposal

The following which are known to be among the best practices must also be present:

- Setting policies and standards;
- Assigning responsibilities and authority;
- Providing a range of services relating to the proper management and use of the records;
- Instituting punitive measures for recordkeeping irregularities in the institution in order to deter similar offenses;
- Designing and administering specialized systems for records storage where necessary; and
- Integrating records management into systems and practices across the organization (Torton, 1999).

Managing Records and Other Information Resources

In practice, the distinction between records management and information management is often blurred, especially in smaller organizations where records management may be undertaken by an information

manager. In organizations that support a dedicated records management service, records managers are often expected to maintain information sources that are not records. Information management is sometimes perceived to be concerned only with current information, and older or historic information, in contrast, the province of records management. Records managers are rarely asked to manage externally generated information products (whether published texts or external data) but may have custody of, or some responsibility, for information products generated internally in paper or electronic form.

Records managers may be interested in information products for a number of reasons. First, internally generated information products are created within a business context. The data in a typical corporate database has been collected in the course of business and, as an information tool, the existence of internal publications or a corporate website indicates that organizational activity occurred when they were created (Kennedy & Schauder, 1998).

Secondly, information products are used in the course of business activities. Just as actions are involved in creating and editing the products of business activities, so actions are involved in using the resulting databases. Although consultation of databases or procedural manuals usually leaves no trace, in some cases it may be necessary for a record of each consultation to be maintained. In other cases a record may not be complete, or fully understandable, unless the information sources used in its preparation are identified. Sometimes an information product such as a database is compiled for the purpose of a single activity; in such cases it can be appropriate to retain the product of the activity in close association with the record of activity.

Thirdly, the use of information products may involve their transmission or publication. One common business activity is the sending of information products from one person or organization to another; brochures, for example, are sent to clients, or news cuttings attached to a memo. When an information product is included in a transaction of this kind, it is normally appropriate for the product to be incorporated into the record of the transaction, or for its identity to be documented so that it can be traced when the record is used at a later time.

Finally, the use of websites is of interest to record managers. Websites may be consulted as information sources but can also be used for carrying out business. While web transactions are effected by the transmissions of data from one party to another, the static content of a website can also form part of the evidence surrounding the transaction. Organizations may wish to consider the longer-term retention of their web pages, not only for informational reasons, but as part of a programme for the management of evidence (Casanova in Shepherd & Yeo, 2003).

Electronic Records Management

According to Stewart and Westgate (2008), an “electronic record is a record stored on electronic storage media that can be readily accessed or changed.” An electronic record is often referred to as a machine-readable record, that is, digitized and coded information that, to be understood must be translated by a computer or other type of equipment. Electronic records have certain attributes including the content or the intellectual component of the document. The structure represents a second attribute and consists of the appearance, arrangement or format of the content of the document and the context which contains the background information that helps explain the meaning of the document. Electronic records can be generated or acquired in different formats. Some of the formats include quantitative data, text, images, and sound that originate as an electronic signal. Electronic records may take the form of a magnetic medium where a variety of magnetically coated materials are used by computers to store data including the cassette, floppy disk, hard disk and magnetic tape. There is a need to monitor electronic records to ensure the records are accessible and readable until final disposition. Organizations may need to reformat or migrate the records. It is likely that increased dependence on electronic recordkeeping will mean that organizations will wish to retain data for longer periods of time. Electronic records may therefore require special care including keeping them at the appropriate temperature and humidity, recopying the information periodically, and testing the readability of an annual sample.

Managing records electronically has a number of advantages for organizations and individuals. It helps to reduce paper storage by converting paper documents stored within the business or in an archive

into an electronic form. Obtaining paper from storage or an archive is typically slower than electronic retrieval and so electronic records improve retrieval time. Along with the improved retrieval time comes the ability to perform searches for similar information. This is especially useful when trying to implement major changes or perhaps identify information subject to litigation. Keeping records electronically saves paper, printer and toner costs by reducing the need to print paper documents as single electronic versions can be used over and over. Electronic records enhance staff productivity since less time is spent searching for documents or trying to find the most recent version. Alongside these many benefits, electronic records do pose a number of challenges. Electronic storage media is unstable as it is difficult to establish the precise life span of most products. There is also the challenge presented by technological change. Both hardware and software technologies can become outdated and therefore no longer supported by computer industry. This creates a problem with long term access to records.

In many tertiary institutions in Ghana, administrative heads and their supporting staff find themselves in difficult situations in terms of the computation of final year students' programmes records for graduation. In some cases the wrong data has been captured and in others the data and ID number have been incorrectly posted. This often results in ad hoc measures including the arbitrary replacement of lost recorded data through further incorrect capturing or blatant omission, all of which could presumably be avoided. Such incidents in records management activities in higher education institutions have undermined the quality of the service delivery of records managers. It has further rendered the credibility of students' academic achievements inauthentic after graduation, sometimes through no fault of their own.

Students, of course, have their own share of the blame for misconduct in academic institutions including the falsification of data and cheating in examinations all of which makes academic achievement less meaningful. This also undermines the dictates of meritocracy and academic self-efficacy. The conceptualization of these strains of misconduct has resulted in the development of theories such as the social capital (negative/positive) theory and critical realism. This paper is, however, limited in its theoretical foundation to the life cycle and continuum model of records management as well as allied theories such as institutional theory and general deterrent theory.

This study seeks to empirically assess records management challenges confronting tertiary institutions in Ghana. The heads of postsecondary or tertiary institutions are increasingly confronted with an influx of applicants from the African sub-regions whose academic records seem to be questionable at first glance. This trend compounds other records management challenges and adds the urgency with which new systems need to be developed.

Research Objectives

This study aims to examine:

1. Internal policies related to student academic record keeping;
2. Records management practices adopted in tertiary institutions;
3. Technology used for keeping student academic records; and
4. Challenges institutions face in managing student records.

THEORETICAL FRAMEWORK

This study is guided by the life cycle concept and continuum model in the management of records. Two additional theories, institutional theory and deterrent theory, are also used.

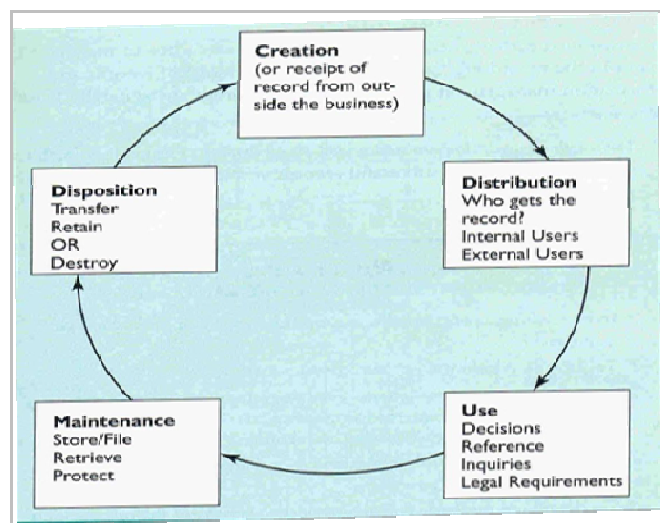
Life Cycle Theory

The International Records Management Trust (IRMT) (1994) and International Management Trust (IMT) (1999) indicates that records can only be managed effectively and efficiently if attention is paid to their handling from the time they are created until when they are disposed of or released to the archives. The

life cycle theory is that recorded information has a life similar to that of a biological organism, in that it is born, it lives, and it dies. Schellenberg (1956) confirm the life cycle concept of records and iterate that the idea was developed in North America. These early writers spoke about the life span of records which included their current use and final destiny. Similar concepts have been employed in other disciplines, notably the information cycle models used in information management and technology. In some narrow interpretations these three stages are seen as the equivalent of current, semi-current and non-current (or archival) phase of a record. In others, they are equated to the records management activities of creation, maintenance and use, and disposal (IRMT, 1994; IMT, 1999). Each of the phases has various elements associated with it and functional activities are performed within each element (Penn, et al, 1994).

Pen, et al (1994) however, argues that this division need not be overstressed. This is because the ultimate goal of the life cycle model is not to develop a set of ways in handling all the various problems and conditions of records management, but to establish a sound methodology for evaluating situations so that the most appropriate course of action can be taken in each instance. Shepherd and Yeo (2003) argue convincingly that the two approaches are not incompatible. The objection is not to the life cycle concept itself, but to those manifestations of it that reflect an undeveloped view of records management or try to introduce excessive practical detail. Specific practice will vary, they argue, from one working context to another, but models based on the life cycle help to identify stages and actions within a records management programme, and thus provide a useful framework for planning, implementation and monitoring. Records management and archives administration constitute one field unified through the records life cycle concept.

Figure 1: The life cycle concept



Source: (Johson & Kallaus, 2004, 7th Ed.)

The Continuum Model

The records continuum model is defined as the consistent and coherent process of records management throughout the life of records from the development of recordkeeping systems through the creation and preservation of records, to their retention and use as archives (IMT, 1999). The model is largely a critique of the life cycle concept. Among the issues which the continuum seeks to address are suggestions that the life cycle model is biased towards paper records and does not adequately address electronic records management issues. From a more comprehensive premise, the continuum model also divides the life cycle of a record into two phases namely, a records management phase and an archival phase, each consisting of four distinct and separate stages (IRMT, 1994).

Allied Theories

The institutional theory considers the process by which structures including schemas, rules, norms and routines become established as authority guidelines for behaviour. It examines how these elements are created, diffused, adopted and adapted over space and time and how they fall into decline and issue. The foundational belief of this theory is that of stability and order in social life. Consequently, issues related to student academic records should be maintained by the rules and norms establishing them.

The General Deterrent Theory (GDT) posits that individuals could be dissuaded from committing anti-social acts through the application of countermeasures (Schuessler, 2009). This may include appropriate disincentives and sanctions. Using GDT as a guideline, countermeasures can thus be adopted to eliminate any threat or at least mitigate risk. In records management, countermeasures like education and training, back-ups, reprimands and so on can all serve as tools to prevent or mitigate risk.

METHODOLOGY

A descriptive research design was used in this study. The study population was comprised of students, record keepers and lecturers of tertiary institutions in Ghana. A stratified sampling technique was used to sample 1990 respondents from public and private universities, polytechnics, and nursing and teacher training colleges. The universities sampled included the University for Development Studies, University of Cape Coast, Central University College, Valley View University, and Methodist University College. The polytechnics sampled included Accra Polytechnic and Kumasi Polytechnic. Lastly, Koforidua Nursing Training College, Mount Mary College of Education, and Accra College of Education were also sampled.

A total of 1280 students, 221 record keepers and 489 lecturers were randomly sampled from the selected institutions. In terms of institution, 513 respondents were sampled from the public universities, 600 from the private universities, 400 from the polytechnics, and 169 and 308 respondents from nursing training and teacher training colleges, respectively. Data was analyzed with SPSS version 17. Means, standard deviations, chi square and ANOVA were used to describe the data.

RESULTS AND DISCUSSION

Internal Policies Related to Student Academic Record-keeping

Table 1 shows that 62.4% of the record keepers indicated that their institutions have policies for managing academic records, while 19.9% were not certain whether their institutions have such policies. This suggests that majority of the tertiary institutions make a concerted effort towards a regular system for handling academic records. Thus, per the isomorphism principle, instituting internal policies to manage academic records implies the commitment of such institutions to protect the integrity of academic records. This is likely to enhance record keeping in such institutions.

Table 1: Institutions Having Policy for Managing Academic Records

Type of institution	Have policy for managing academic records		
	Yes (%)	No (%)	Can't tell (%)
Public university	27 (96.4)	-	1 (3.6)
Polytechnic	33 (55)	9 (15%)	18 (30)
Nursing training	6 (60)	-	4 (40)
Teacher training	23 (100)	-	-
Private university	49 (49)	30 (30)	21 (21)
Total	138 (62.4)	39 (17.7)	44 (19.9)

$$\chi^2 = 45.5 \quad P\text{-value} = 0.001, \text{ df} = 8$$

The uncertainty in the minds of some of the record keepers, however, about the presence of policies for managing academic records in their institutions is a denunciation of the effectiveness of their record keeping systems. The implication is that the schemas, rules, norms and routines for records management, as described by Scott (2004), have not been well established in such institutions. Comparative analyses among the institutions show that teacher training colleges and public universities were more committed to ensuring credible academic records keeping than private universities, polytechnics and nursing training colleges.

One-quarter (24.9%) of the record keepers noted that perpetrators of impropriety in academic record keeping in their institutions are suspended, whilst 19.9% indicated that such persons are transferred to other departments, and 16.7% indicated that they are dismissed. However, 15.4% of the record keepers indicated that no action is taken against perpetrators of impropriety in academic record keeping. This is likely to affect the effectiveness of record management systems in such institutions since there are no deterrence mechanisms. According to the GDT, impropriety in academic record keeping is more likely to increase in institutions that do not have the political will and commitment to punish perpetrators of such acts. Schuessler (2009) adds that an increase in indecencies in academic record keeping is a major dent on the credibility and integrity of the academic records and image of such institutions.

Anova results showing a p-value of 0.01 ($df = 8$; F statistic = 10.5; F critical = 5.1) imply that there was a significance difference in the incidences of academic irregularities among the institutions which have internal policies for regulating academic records, institutions which do not have policies, and those who are uncertain of having such policies. This suggests that the adoption of an internal policy is critical for controlling irregularities in academic records keeping in tertiary institutions.

Records Management Practices in Tertiary Institutions

Records management practices adopted by the institutions included planning the information needs of the schools, enforcing policies and practices regarding records organisation, and coordinating internal and external access to records. Irrespective of the institutions having well formulated internal policies to regulate academic record keeping, all have adopted certain practices to safeguard the integrity of their academic records. Such practices are likely to check the incidence of academic records irregularities in tertiary institutions.

A chi-square test of independence of 11.7 ($df = 12$) with an asymptotic significance of 0.52 implies that there was no significant association between the type of institution and the practices to control indecencies in academic records management. The implication of this is that tertiary institutions adopt practices deemed convenient and effective for curbing irregularities in academic records management. The results here may be attributed to freedom of institutions to adopt the practices best fit for addressing their record security challenges.

Technology Used for Keeping Student Academic Records in Tertiary Institutions

From the study, 91.6% of the respondents indicated that their institutions use electronic systems to manage student academic records, 2% indicated that their institutions used manual or paper-based systems, and 6.4% admitted that their institutions used both manual and electronic systems to manage academic records. This reflects the assertion of InterPARES (2002) that due to the flexibility, increased understanding in the use of ICT, and enhanced data security measures, more institutions are switching from paper-based record keeping to electronic-based record management systems.

The reasons given for the adoption of electronic systems in managing student academic records were to keep abreast of current technological issues in records management, enhance data security, address data security challenges, limit accessibility rights to academic records, and improve tracking systems. Others motivations included to reduce space needed for paper-based records, avoid data loss through manual record keeping systems, eliminate the disappearance of record files, and to move away

from the fragility of paper-based records keeping systems. This suggests that the majority of tertiary institutions have confidence in the ability of electronic-based record keeping systems to address records keeping challenges.

The reasons given for the adoption of paper-based records keeping systems in some of the tertiary institutions included the following: paper-based record keeping is a tradition in the institution, fear of cyber attack and Internet hackers on such sensitive records, fear of viral attack on academic records, lack of storage capacity for such records, and not having database applications to run electronic record keeping systems. A number of institutions were thus more concerned about the challenges associated with electronic-based record keeping systems than the benefits they were likely to experience.

Some of the reasons for adopting both electronic and paper-based technologies for student academic records keeping were to produce complementary backups, generate backups to authenticate student academic records, have backups in times of technological or power failure, and an inability to convert all paper-based records to electronic form. These results suggest that some institutions are still in the process of transiting from paper-based records keeping systems to electronic systems. At the same time, some institutions still doubt the effectiveness of a completely electronic-based system for managing student academic records. This explains why a number of public institutions have adopted both approaches.

A chi-square test of independence of 0.001 ($df = 7$, $\chi^2 = 75.78$) with the acceptable margin of error of 0.05 implies that there was a significant association between typology of technology used to manage student academic records and the effectiveness of eroding irregularities in academic record management. Thus some of the approaches were more effective than others in addressing data security challenges surrounding student academic records keeping.

Challenges Institutions Face in Managing Student Academic Records

This study found that the challenges faced by institutions included: poor knowledge among record keepers on electronic records management (mean = 2.7, stdv. = 0.69), inadequate record keeping equipment (mean = 2.4, stdv. = 0.79), interferences from supervisors (mean = 2.2, stdv. = 0.76), and low morale on the part of record keepers due to poor remuneration (mean = 2.6, stdv. = 0.91). Other challenges were the frequent crashing of hard drives leading to the loss of records (mean = 2.6, stdv. = 0.87), weak technological support for efficient record keeping (mean = 2.3, stdv. = 0.65), and frequent freezing of computers making it difficult to retrieve information (mean = 2.5, stdv. = 0.85).

Respondents from the public universities and teacher training colleges agreed that there was poor knowledge in computerized records management systems among record keeping staff. Respondents from the polytechnics strongly agreed with this conclusion, while respondents from nursing training colleges and private universities disagreed. Soni (2004) reports that insufficient capacity among record keepers increases insecurity in electronic records keeping.

Lack of adequate equipment to effectively manage electronic records in public tertiary institutions is a major indictment on the commitment of administration towards records keeping. This is because adequate equipment and human capacity form the bases for effective record keeping (InterPARES, 2002). Low morale on the part of record keepers due to poor remuneration provides breeding grounds for bribery and falsification of academic records.

All of the respondents from the various institutions strongly agreed that system viruses are leading to loss of records (public universities – mean = 1.5, stdv. = 0.44; polytechnics – mean = 1.7, stdv. = 0.72; nursing training colleges – mean = 1.8, stdv. = 0.47; teacher training colleges – mean = 1.7, stdv. = 0.51; and private universities – mean = 1.6, stdv. = 0.63). This is in line with the assertion of InterPARES (2002) that electronic systems bear the seeds for their own destruction. It explains why some institutions have chosen to combine both electronic and manual records keeping systems.

A chi square test of independence of 0.091 ($df = 24$, $\chi^2 = 23.08$) implies that there was no significant association between challenges in academic records management and the various categories of tertiary institutions. Challenges in academic records keeping are thus general among tertiary institutions.

CONCLUSION/RECOMMENDATIONS

The study recommends that electronic record keepers must stay up-to-date on current database applications, software and data security issues so as to safeguard the sanctity of records. Institutions should likewise secure database applications and record keeping software for their record keepers. It is important that institutions also procure antivirus software and a constant Internet supply (for updates) to protect student academic records against viruses.


Motivation and incentive packages as well as proper checks and balances should be instituted by the administration of institutions for records keeping staff to insulate them against attempts at bribery and the falsification of records. This also means that people who are employed as records managers should be of high moral value in order to eschew any possible misconduct in their operations. Sometimes in order to ensure the right process for screening job applicants for specific roles, it may be an ideal to hire the service of competent recruitment agencies.

All institutions should have internal policies for regulating records keeping systems. These policies should make it compulsory to generate a limited number of duplicates of sensitive documents in different formats to be kept under strict security. This will help to reduce the rate of data loss and delays in retrieving records during power outages and hard drive crashes. Record keeping staff should be retrained and have all of the challenges affecting their work made evident to them to guard against possible misconduct. Policies regarding punishment for deliberate misconduct in records management should be implemented and publicized.

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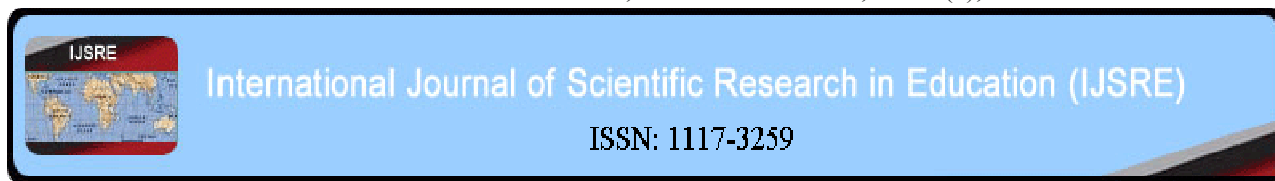
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Social Studies Trainee Teachers' Perceptions of their Community in Terms of Various Components of Sustainability: A Case Study from Kutahya City, Turkey.

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Abstract

The current study aims to determine social studies trainee teachers' perceptions of their own community in terms of sustainability. The answers for present study question are sought through a questionnaire conducted with Turkish trainee teachers in May 2013. The sample of the research is composed of 176 social studies trainee teachers at Dumlupinar University, Faculty of Education in Turkey. When designing the questionnaire, the eight key components which has identified by UK Government of sustainable communities and items of each components have been used as similar to the questionnaire of Alkis (2012). In order to evaluate the data SPSS programme was used. Independent samples T-test scores indicated that there was not a significant difference between males and females related to trainees' perceptions of their community in terms of sustainability. Other results are presented in detail in the study.

Keywords: Sustainability, Sustainable Community, Social Studies Teacher Trainees, Education for Sustainable Development, Turkey.

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INTRODUCTION

Communities today are facing increasingly complex issues and rapid changes that challenge their future direction. Growing population diversity, economic hardship and social inequity, conflicting development desires, and passionate environmental concerns all pose a challenge for local leaders and community developers in their attempt to make sound, widely supported decisions. Conflicting views of what community residents want and expect of their community makes it difficult to understand and identify residents' desires and arrive at a community consensus for the future. Reaching community consensus and articulating a shared community vision is not easy. Even smaller, rural communities are becoming increasingly diverse in age, income status, race, ethnicity and culture (Moss & Grunkemeyer, 2010). Powell (2012) emphasized that communities are the primary focus of responsibility for creating a sustainable world. Besides, The slogan 'think globally, act locally' summarises the contemporary debate about sustainable communities. It goes to the core of concerns about democratic participation in a global society. As cited by Lawson & Kearns (2010), community engagement is seen as an important element in a process intended to develop 'sustainable communities'.

In spite of the widespread consensus of the importance of "sustainable communities" as an overarching policy goal, how it is achieved on the ground remains unclear. Although "sustainable communities" is a contested concept, there is agreement that it broadly captures the notion of a "community" adhering to principles of sustainable development with an emphasis on the "human" or "social" dimension of sustainability (Cited in Newton & Franklin, 2011). Defining sustainable communities and their characteristics is challenging, as no communities or societies in human history could stay sustainable forever. The notion of sustainable communities is relative and there is no definition that is relevant for all times and places (Cited in Ercan, 2011). Despite the all difficulties, it is clear that there are several definitions of sustainable communities.

By definition, sustainable communities are places planned and built to support sustainable living with focus on economic sustainability and environmental sustainability. Sustainable communities expect sustainable urban infrastructure and/or sustainable municipal infrastructure. Sustainable communities are places where people want to live and work, now and in the future (Cited in McDonald, Malys & Maliene, 2009). As cited by Maliene et.al. (2012), sustainable communities meet the diverse needs of existing and future residents, their children and other users, contribute to a high quality of life and provide opportunity and choice. They achieve this in ways that make effective use of natural resources, enhance the environment, promote social cohesion and inclusion and strengthen economic prosperity. In other words (sustainablecommunities.gov, 2013), sustainable communities are places that have a variety of housing and transportation choices, with destinations close to home. As a result, they tend to have lower transportation costs, reduce air pollution and stormwater runoff, decrease infrastructure costs, preserve historic properties and sensitive lands, save people time in traffic, be more economically resilient and meet market demand for different types of housing at different price points. Rural, suburban, and urban communities can all use sustainable communities' strategies and techniques to invest in healthy, safe and walkable neighborhoods, but these strategies will look different in each place depending on the community's character, context, and needs.

Due to the ongoing global urbanization, cities as spaces for living, economy, culture and nature increasingly become a focal point for the concept of sustainability (Cited in Odermatt & Brundiens, 2007). However, the reality in cities is not as attractive and promising as the drivers that cause urban growth. Cities are equally the place of economic growth and of increasing socio-economic disparities. They are places of social and cultural diversity as well as of disintegration processes. Cities reflect technological progress as well as the ecological impacts of an unbalanced development. Thus, the concept of sustainable development ought to be applied with special reference to cities (Odermatt & Brundiens, 2007). It is clear that there cannot be 'global parameters' for development of, or performance appraisal of sustainable human settlements, as all human settlements reflect significantly different characteristics originating from the functions, behaviour, aspirations, culture and life style of the society that inhabits the settlements. More important among these parameters are physical features and geopolitical location, socio-cultural values, human and physical resources, level and potential for economic development, level of skill, education and scientific/technological aptitude, ethical, political,

legal and governance system, transportation, communication, agricultural and industrial infrastructure, etc. All these parameters vary with the latitude and longitudes and are rarely common at the micro level. Attempting a global solution to the problem of sustainable human settlement will therefore be difficult (Deb, 1998).

Many cities, towns, and other localities find ways to bring citizens together to define a community's course and to develop strategies to make it more sustainable. The following part presents information on approaches and techniques used successfully in communities to involve citizens (sustainable, 2013):

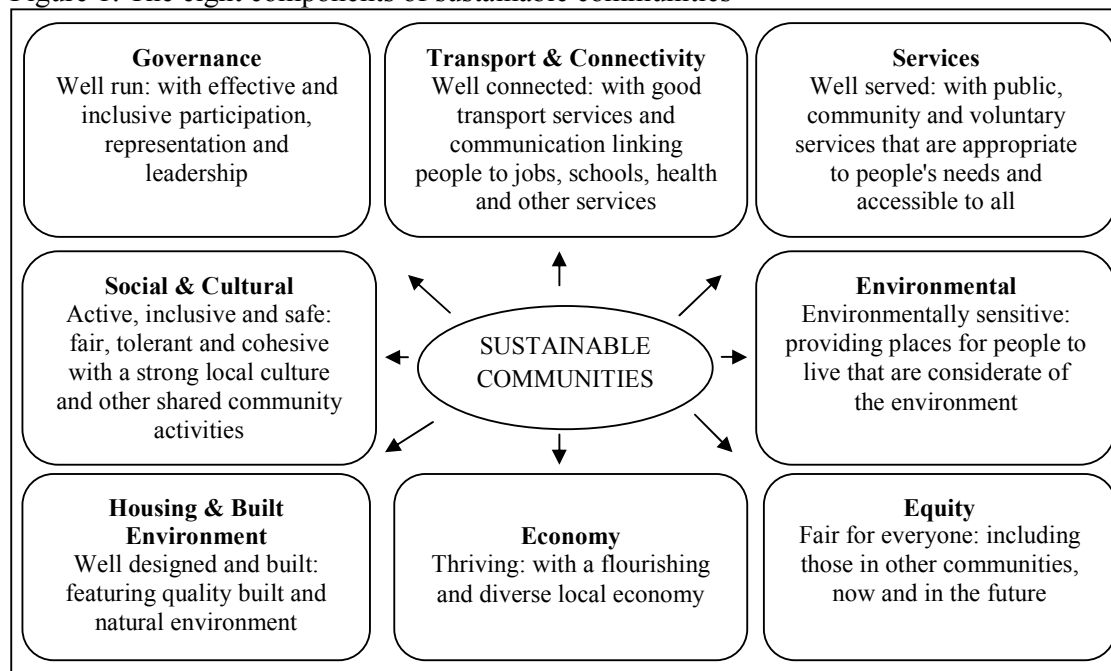
- A community must develop a vision in order to address sustainability.
- Innovative and constructive partnerships between different sectors and interests often provide significant progress toward creating sustainability. Partnerships may evolve from successful visioning, inventory, or indicator projects, or they may form around specific issues or areas of concern.
- Preparation of a community resource inventory and the identification of local indicators are important in order to measure progress toward sustainability
- Communities with the greatest and most diverse citizen participation are often resilient and strong. Engaging citizens to address common issues is essential for educated decision-making.
- Justice and equity are fundamental in a civilized society. Examples of injustice are a lack of adequate housing, poor sanitation, an inadequate supply of pure water, and environmental degradation related to industrial pollution.
- Alternative dispute resolution is a tool for resolving conflicts within a community, and mediation is used in the workplace and in institutions to help individuals find common ground and peaceful solutions to problems.
- Every community has a history, and events planned around it are both educational and cultural. These activities provide local character and strengthen community ties.

Besides, UK Government has identified eighth key components of sustainable communities, as shown in Figure 1 (Cited in Communities and Local Government, 2011; McDonald, Malys & Maliene, 2009; adopted from the Egan review and EU Bristol Accord). This emphasized that sustainable communities must be offered several opportunities for basic needs and sustainable lifestyles for their residents.

Sustainable Development (SD) is a future-oriented concept of peace between humans and nature and justice between all generations, nations, cultures and regions of the world. In addition to social, environmental and economic concerns, the concept of sustainable development also includes global responsibility and political participation (Lucerne Declaration, 2007). The decade of Education for Sustainable Development (2005-2014) aims to integrate the principles, values and practices of sustainable development into all aspects of education and learning so that sustainable development can be understood by everyone and participation in its attainment can take place at every level of society (Bird, Lutz & Warwick, 2008). When development takes place in communities, whether physical or social, it is the result of the action of the communities through the various channels of action available to them. It is considered a process of social action in which members of the community organize themselves for action by defining their individual and collective or common needs and work out the means of meeting the needs. This situation promotes innovativeness and other psychological condition that is fundamental to self-improvement. The people are expected to be able to apply the knowledge and skills to the measures at their disposal to advance their own development and sustain as well, the initiated growth process. The improvement or development of the community is anchored on the involvement or active participation of the people in the planned process of change or growth. The community members in the partnering and

participatory efforts must be involved in planning, implementing and evaluating community development programmes initiated in order to ensure full commitment to the programmes (Ebun & Francis, 2012).

Figure 1: The eight components of sustainable communities



As known, education is an essential medium for achieving sustainability. People around the world recognize that current trends of economic development are not sustainable and that public awareness, education, and training are keys to moving society toward sustainability (McKeown et al., 2002). Since children are educated under the guidance of teachers, teachers need to gain the necessary tools and skills for coping with the demands of the ‘unsustainable world’. Then, today, as in any other countries, Turkish teacher education have to face the challenges of our times in terms of SD. However, although there has been a growing interest and, in turn, body of knowledge being created on SD from the view of different disciplines, it is not a well-known issue and concept in Turkish context (Alkis & Ozturk, 2007). Related to sustainable development, in the new Elementary Education Program that was activated in 2004, a special effort is aimed at educating children who are supportive of the environment, respect societal values, adopt economic improvement that is sustainable, and consider regional economic differences with a focus on production. In Turkey, the courses that contribute to Education for Sustainable Development (ESD) at the elementary grade levels are mostly in science and technology and in social studies (Alkis, 2008). Nevertheless, the study of Petersen & Alkis (2009) indicated that most topics related to sustainable development at the elementary level of education are related to environmental issues. The topics that receive the most detailed attention in lessons tend to be environmental issues rather than the issues related to economic and social aspects of sustainable development.

In this respect, as emphasized by Alkis & Ozturk (2007), ESD should not be omitted or skipped over quickly because the issue of SD has a vital importance in the lives of all people. Such education will widen the students’ views and understanding of the world encouraging them having a direct contact with environmental, social and economic developments which will affect their lives dramatically. This is to teach them to take responsibility and control of their own lives and the society they are in, to give the knowledge of what it means to live along with others, and the wisdom to see the choices they make as individuals and professional will eventually have an impact on the whole community. In this respect, a key concern for the programmes of teacher education should be to enhance the student teachers’ understanding of SD and about how best to support their future pupils learning of SD and thus help them in achieving a sustainable life. Similarly, As Boehn (2007) stressed, because numerous members of academia and the political realm are convinced that swift action is required, the focus of future-oriented teacher training must be directed to the topic of sustainable development.

To achieve a more sustainable world, “learning” is seen as being key (Sterling 2001). Underlying discourses of ESD, there seems to be an assumption that if we teach children and young people the right skills and knowledge they will live sustainably. Yet, there has been insufficient attention paid to the way in which children’s ESD learning influences sustainable developments in communities. Indeed, there are a growing number of critics who question the extent to which ESD learning “spills over” into communities (Cited in Smith & Burns, 2013). So, education is fundamental to achieve sustainability and to create a more sustainable future. All subject teachers can contribute to education for sustainability (Gadotti, 2008). Especially, social studies courses consists of three dimensions of SD which are environment, economy and society, it is a unique field to teach sustainability issues to students at elementary level. Thus, students can gain the basic recognition of sustainability, sustainable life styles and the steps for sustainable communities. The purpose of this article is therefore to reveal perceptions of teacher trainees' about their community because of their role as actors of change in creating sustainable communities. Based on these, the present study aims to determine social studies trainee teachers’ perceptions of their own community in terms of sustainability. Naturally, perceptions of community in terms of sustainability related to where to live. In this study, research group live in Kutahya city in Turkey.

METHOD

The answers for present study question are sought through a questionnaire conducted with Turkish social studies trainee teachers in May 2013. The sample of the research is composed of 176 trainee teachers at Dumlupinar University, Faculty of Education in Turkey. Within the targeted group 50% of respondents were female and 50% were male. When designing the questionnaire, the eight key components which has identified by UK Government of sustainable communities and items of each components have been used as similiar to the questionnaire of Alkis (2012). The purpose of the questionnaire was to raise an understanding about trainee teachers’ perceptions of their community in terms of sustainability. They have been asked to choose “agree, partially agree, disagree or no idea” with each of 40 statements in questionnaire. The questionnaire was composed of eight sections, each section assessing a particular aspect of the research as will be stated below. In order to evaluate the data the Statistical Package for the Social Sciences (SPSS) programme was used.

RESULTS

First of all, Kolmogorov-Smirnov and Shapiro-Wilk Tests were applied to determine if the data distributed are statistically normal or not. The analysis revealed that the distribution of the data is normal ($P > 0.05$) and parametric tests were used in the following. So One-Way Anova test was used because of the distribution of data was normal. It was determined that there was a statistically significant difference as it can be seen from Table 1.

Table 1: Anova Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6409.541	3	2136.514	8.766	0.000**
Within Groups	41919.641	172	243.719		
Total	48329.182	175			

** $P < 0.05$ there is statistically significant difference

Table 2: Tukey HSD Multiple Comparisons Results

Grade	Grade	Mean Difference	Std.Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	15,53241*	3,52301	,000	6,3926	24,6722
	3	7,10185	3,88839	,264	-2,9859	17,1896
	4	16,41942*	3,95141	,000	6,1682	26,6707
2	1	-15,53241*	3,52301	,000	-24,6722	-6,3926
	3	-8,43056*	3,07863	,034	-16,4175	-,4436
	4	0,88701	3,15784	,992	-7,3055	9,0795
3	1	-7,10185	3,88839	,264	-17,1896	2,9859
	2	8,43056*	3,07863	,034	,4436	16,4175
	4	9,31757*	3,56089	,047	,0795	18,5557
4	1	-16,41942*	3,95141	,000	-26,6707	-6,1682
	2	-0,88701	3,15784	,992	-9,0795	7,3055
	3	-9,31757*	3,56089	,047	-18,5557	-,0795

*The mean difference is significant at the .05 level

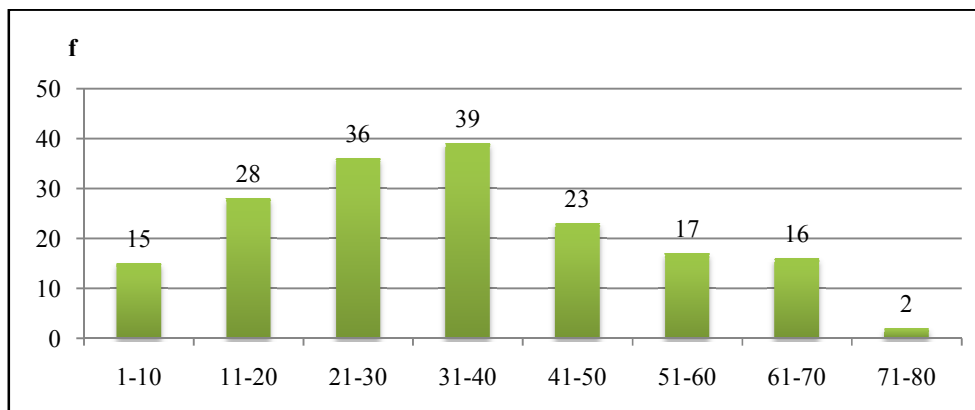
Variance analysis result showed that there was a statistically significant difference, therefore, it was used Tukey test to find the differences in detail. It is seen from Table 2 that the result of first grades is higher than second and fourth grades and there is a statistically significant difference. The result of second grades is lower than first and third grades and there is a statistically significant difference. In addition, the result of third grades is higher than the second and fourth grades and there is a statistically significant difference. The result of fourth grades is lower than first and third grades and there is also a statistically significant difference. Based on these, it is clear that first grades had the highest average and fourth grades had the lowest average.

As seen from Table 3, independent samples *t*-test scores indicate that there was not a significant difference between males and females ($p > 0.581$) related to trainee teachers' perceptions of their community in terms of sustainability.

Table 3: Independent samples *t*-test for trainee teachers' perceptions of their community

Group	N	\bar{x}	S.S.	t	P
Girl	88	31,7386	17,46425	-,552	0.581
Boy	88	33,1250	15,79671		

$P > 0.05$ there is no statistically significant difference (Sig. 2-tailed)



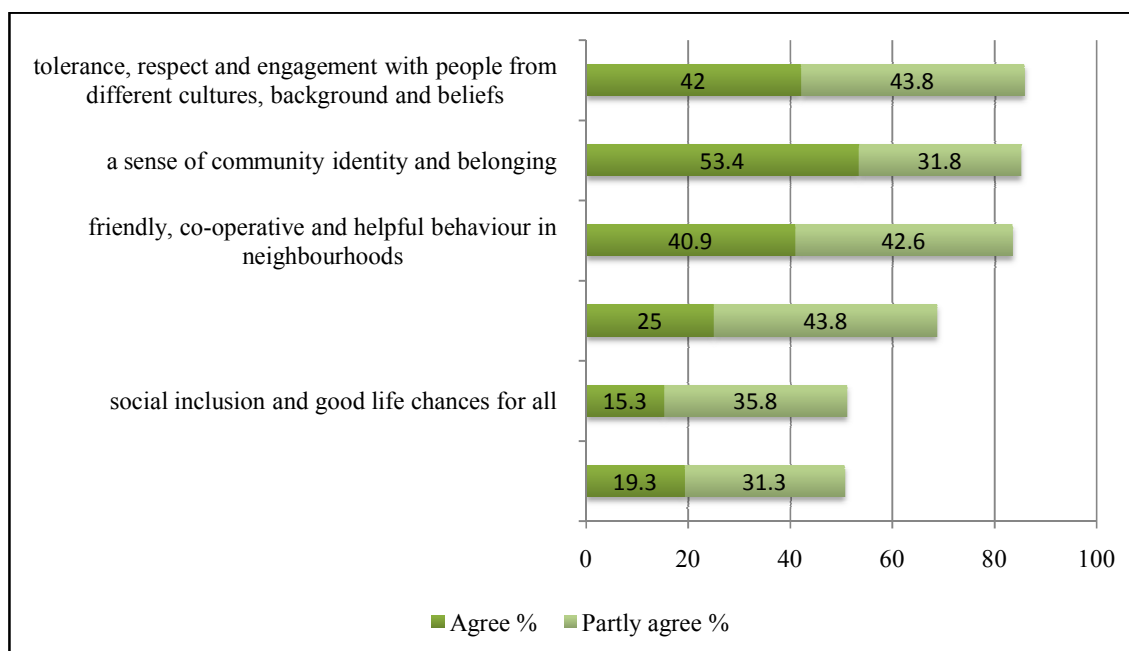
Graph 1: General Results of Teacher Trainees' Perception of their Community

Table 3 and Graph 1 show the general results of teacher trainees' perception of their community in terms of sustainability. The average score of all teacher trainees is 29.6. Because of the maximum score can be 80 in the questionnaire, this average score shows that social studies teacher trainees' perception of their community in terms of sustainability is under the mean point (40). In the following part, trainee teachers asked to choose “agree, partially agree, disagree or no idea” with each statements related to each category.

Category 1 - Active, inclusive and safe: It is seen from the Table 4 and Graph 2 related to active, inclusive and safe category, most of the trainees believe their community offer "tolerance, respect and engagement with people from different cultures, background and beliefs" by 85.8%; "a sense of community identity and belonging" by 85.2%; "friendly, co-operative and helpful behaviour in neighborhoods" by 83.5%. Nevertheless, half of the trainees disagree with the statements that their community offer “social inclusion and good life chances for all” and “low levels of crime, drugs and antisocial behaviour with visible, effective and community-friendly policing”.

Table 4: Active, Inclusive and Safe Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
a sense of community identity and belonging	94	53,4	56	31,8	14	8	12	6,8
tolerance, respect and engagement with people from different cultures, background and beliefs	74	42	77	43,8	24	13,6	1	0,6
friendly, co-operative and helpful behaviour in neighborhoods	72	40,9	75	42,6	22	12,5	7	4
opportunities for cultural, leisure, community, sport and other activities, including for children and young people	44	25	77	43,8	52	29,5	3	1,7
low levels of crime, drugs and antisocial behaviour with visible, effective and community-friendly policing	34	19,3	55	31,3	68	38,6	19	10,8
social inclusion and good life chances for all	27	15,3	63	35,8	76	43,2	10	5,7



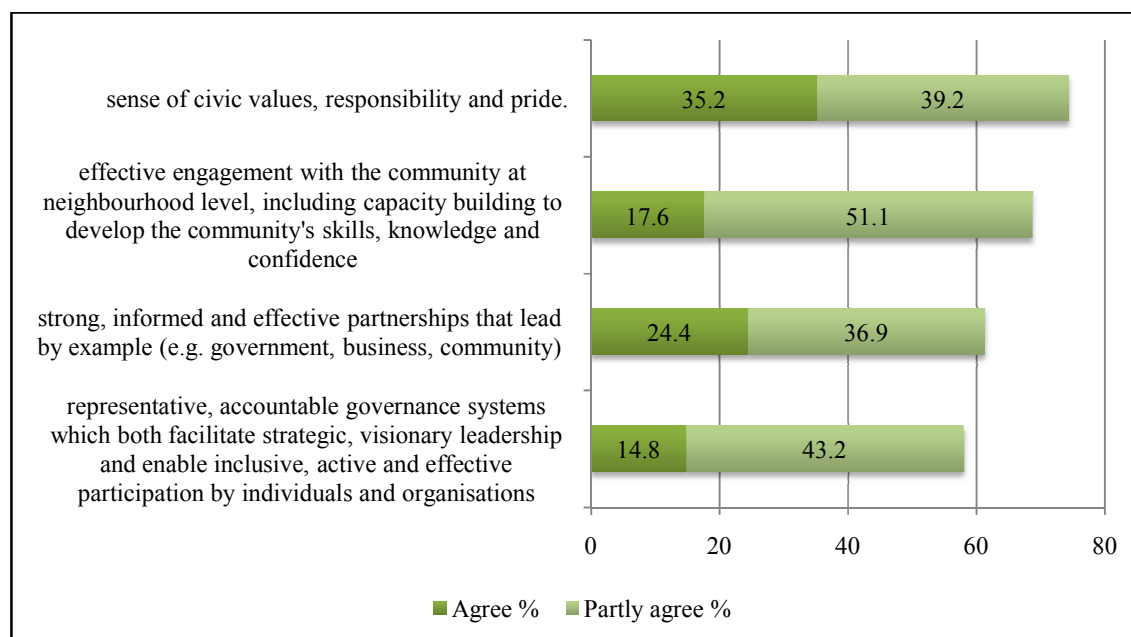
Graph 2: Active, Inclusive and Safe Category

Category 2 - Well Run: Table 5 and Graph 3 show that most of the trainees believe their community offer “sense of civic values, responsibility and pride” by 74.4% and "effective engagement with the community at neighborhood level, including capacity building to develop the community's skills,

knowledge and confidence" by 68.8%. Both of the other two statements related to this category supported by around 60 % of trainees.

Table 5: Well Run Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
representative, accountable governance systems which both facilitate strategic, visionary leadership and enable inclusive, active and effective participation by individuals and organisations	26	14,8	76	43,2	60	34,1	14	8
effective engagement with the community at neighborhood level, including capacity building to develop the community's skills, knowledge and confidence	31	17,6	90	51,1	33	18,8	22	12,5
strong, informed and effective partnerships that lead by example (e.g. government, business, community)	43	24,4	65	36,9	56	31,8	12	6,8
sense of civic values, responsibility and pride	62	35,2	69	39,2	33	18,8	12	6,8

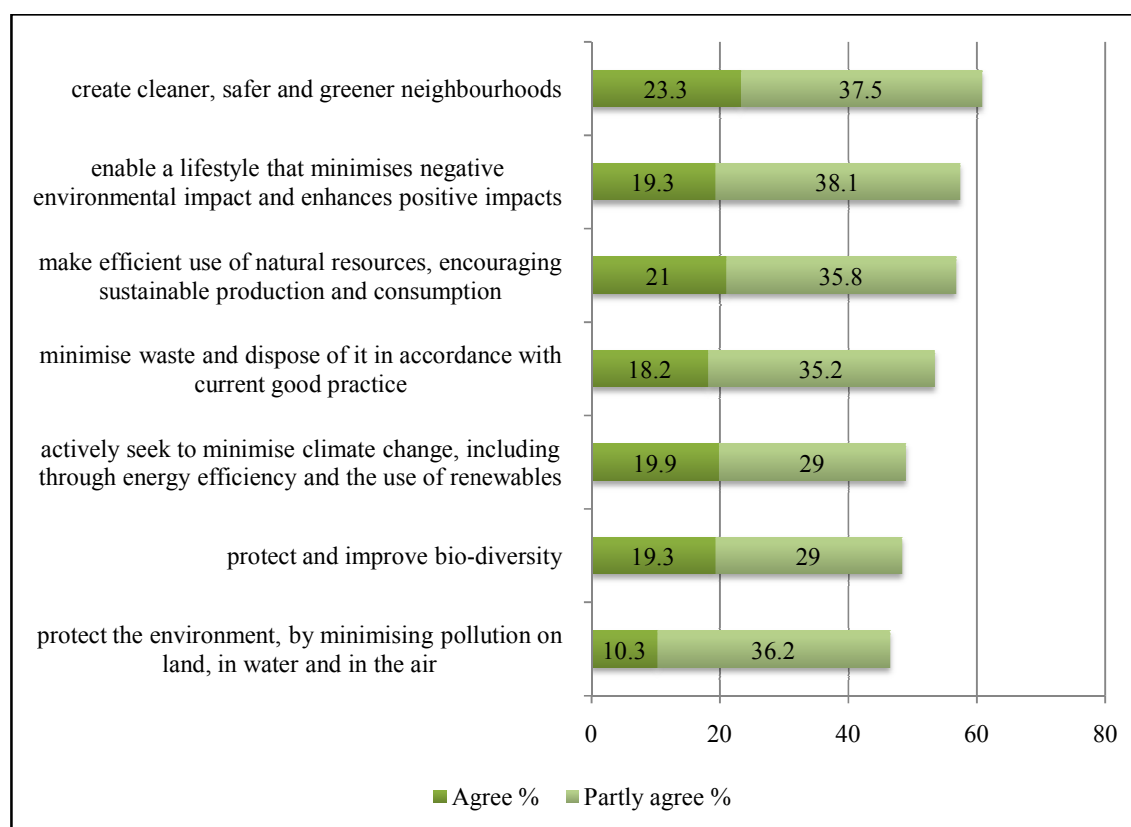


Graph 3: Well Run Category

Category 3 - Environmentally sensitive: It is seen from the Table 6 and Graph 4 related to environmentally sensitive category show that most of the trainees (60,8%) believe their community “create cleaner, safer and greener neighbourhoods”. Other statements in this category supported by between 40% and 60% of trainees but most of the responses in “partly agree” category. Nevertheless, around half of them do not believe that their community “protect the environment, by minimising pollution on land, in water and in the air”, "protect and improve bio-diversity" and " actively seek to minimise climate change, including through energy efficiency and the use of renewable".

Table 6: Environmentally Sensitive Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
actively seek to minimise climate change, including through energy efficiency and the use of renewable	35	19,9	51	29	72	40,9	18	10,2
protect the environment, by minimizing pollution on land, in water and in the air	32	18,2	61	34,7	77	43,8	6	3,4
minimise waste and dispose of it in accordance with current good practice	32	18,2	62	35,2	67	38,1	15	8,5
make efficient use of natural resources, encouraging sustainable production and consumption	37	21	63	35,8	67	38,1	9	5,1
protect and improve bio-diversity (e.g. wildlife habitats)	34	19,3	51	29	72	40,9	19	10,8
enable a lifestyle that minimises negative environmental impact and enhances positive impacts (e.g. by creating opportunities for walking and cycling, and reducing noise pollution and dependence on cars)	34	19,3	67	38,1	68	38,6	7	4
create cleaner, safer and greener neighborhoods (e.g. by reducing litter and graffiti, and maintaining pleasant spaces).	41	23,3	66	37,5	63	35,8	6	3,4



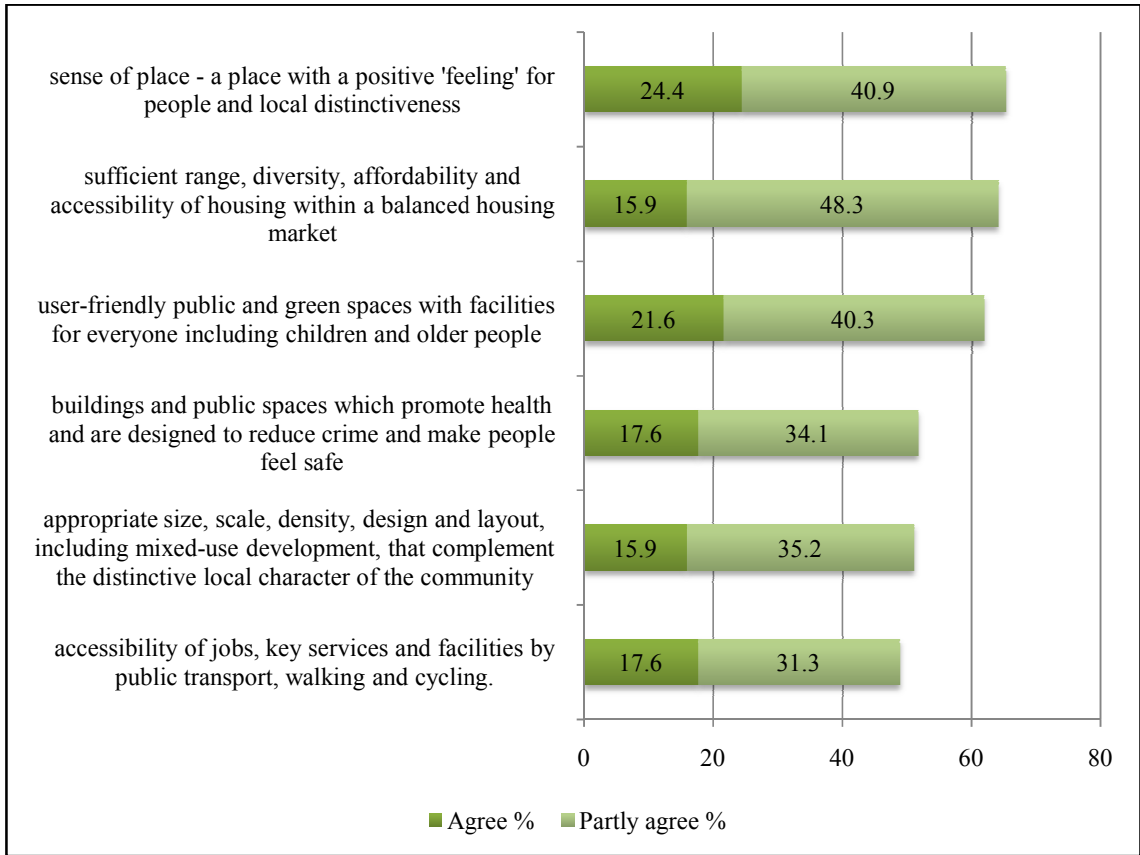
Graph 4: Environmentally Sensitive Category

Category 4 - Well Designed and Built: Table 7 and Graph 5 related to well designed and built category show that majority of the teacher trainees believe their community offer “sense of place - a place with a positive 'feeling' for people and local distinctiveness” by 65.3%, "sufficient range, diversity, affordability and accessibility of housing within a balanced housing market" by 64.2% and "user-friendly public and green spaces with facilities for everyone including children and older people" by 61.9%.

Nevertheless, nearly half of them do not believe that their community offer “accessibility of jobs, key services and facilities by public transport, walking and cycling”, "appropriate size, scale, density, design and layout, including mixed-use development, that complement the distinctive local character of the community" and “buildings and public spaces which promote health and are designed to reduce crime and make people feel safe”.

Table 7: Well Designed and Built Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
sense of place - a place with a positive 'feeling' for people and local distinctiveness	43	24,4	72	40,9	35	19,9	26	14,8
user-friendly public and green spaces with facilities for everyone including children and older people	38	21,6	71	40,3	59	33,5	8	4,5
sufficient range, diversity, affordability and accessibility of housing within a balanced housing market	28	15,9	85	48,3	56	31,8	7	4
appropriate size, scale, density, design and layout, including mixed-use development, that complement the distinctive local character of the community	28	15,9	62	35,2	76	43,2	10	5,7
buildings and public spaces which promote health and are designed to reduce crime and make people feel safe	31	17,6	60	34,1	76	43,2	9	5,1
accessibility of jobs, key services and facilities by public transport, walking and cycling	31	17,6	55	31,3	78	44,3	12	6,8

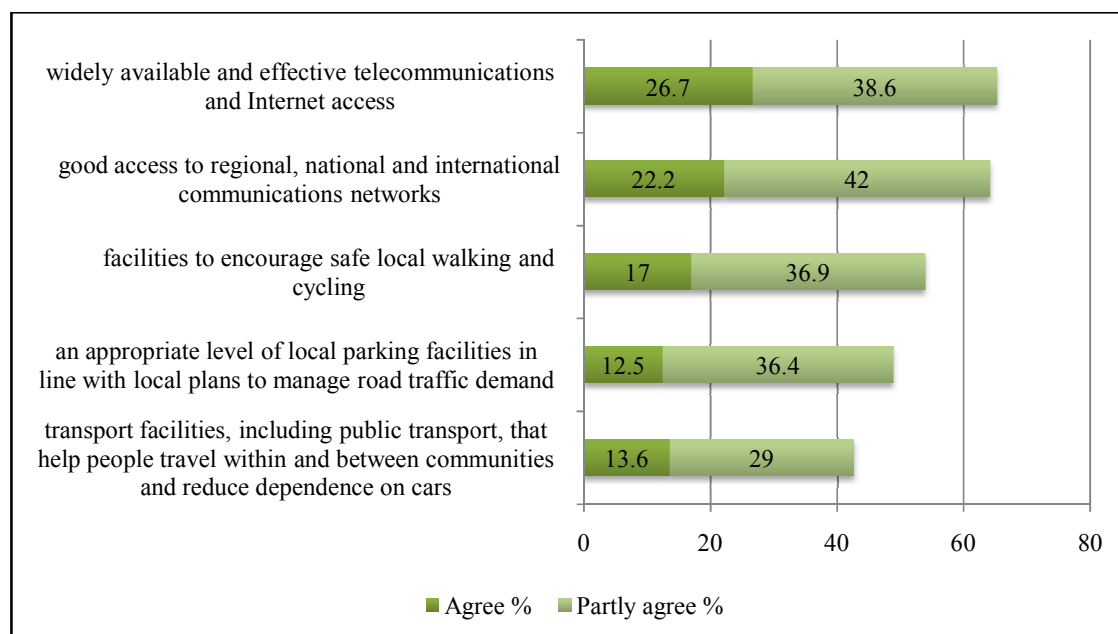


Graph 5: Well Designed and Built

Category 5 - Well connected: Table 8 and Graph 6 show that around 60% of the trainees believe their community offer “widely available and effective telecommunications and Internet access” and “good access to regional, national and international communications networks”. Unfortunately, trainees believe that their community does not offer “transport facilities, including public transport, that help people travel within and between communities and reduce dependence on cars”, “an appropriate level of local parking facilities in line with local plans to manage road traffic demand” and “facilities to encourage safe local walking and cycling” 52.8%, 44.9 % and 43.8%, respectively.

Table 8: Well Connected Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
transport facilities, including public transport, that help people travel within and between communities and reduce dependence on cars	24	13,6	51	29	93	52,8	8	4,5
facilities to encourage safe local walking and cycling	30	17	65	36,9	77	43,8	4	2,3
an appropriate level of local parking facilities in line with local plans to manage road traffic demand	22	12,5	64	36,4	79	44,9	11	6,3
widely available and effective telecommunications and Internet access	47	26,7	68	38,6	47	26,7	14	8
good access to regional, national and international communications networks	39	22,2	74	42	48	27,3	15	8,5

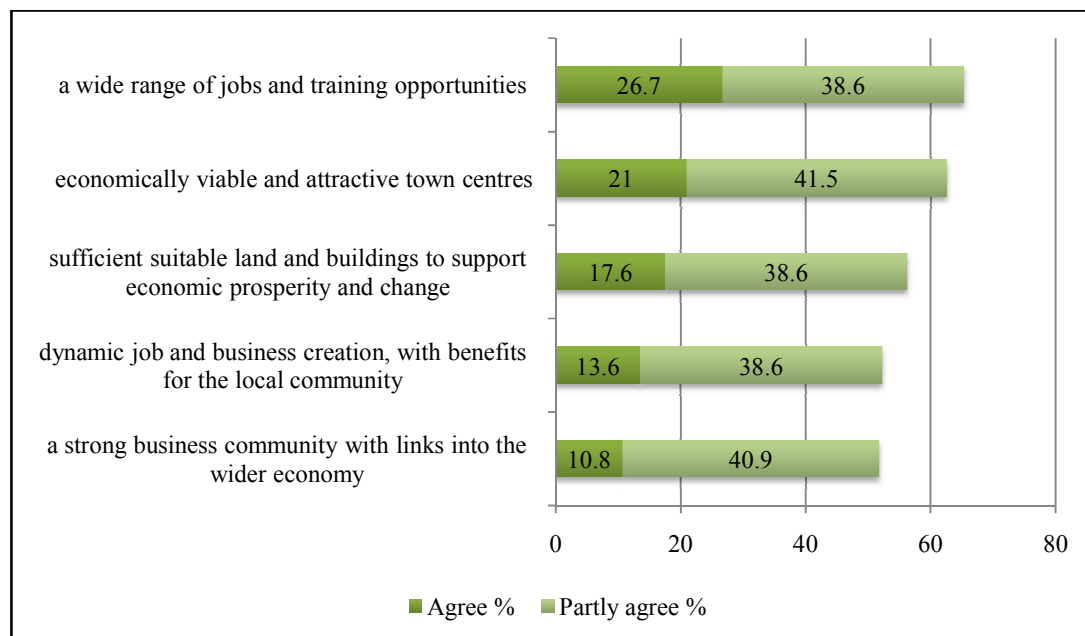


Graph 6: Well Connected category

Category 6 - Thriving: It is seen from the Table 9 and Graph 7 related to thriving category that around 60% of trainees believe their community features “a wide range of jobs and training opportunities” and “economically viable and attractive town centres”. Other statements in this category supported by under 60% of trainees.

Table 9: Thriving Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
a wide range of jobs and training opportunities	47	26,7	68	38,6	52	29,5	9	5,1
sufficient suitable land and buildings to support economic prosperity and change	31	17,6	68	38,6	61	34,7	16	9,1
dynamic job and business creation, with benefits for the local community	24	13,6	68	38,6	70	39,8	14	8
a strong business community with links into the wider economy	19	10,8	72	40,9	73	41,5	12	6,8
economically viable and attractive town centres	37	21	73	41,5	56	31,8	10	5,7



Graph 7: Thriving Category

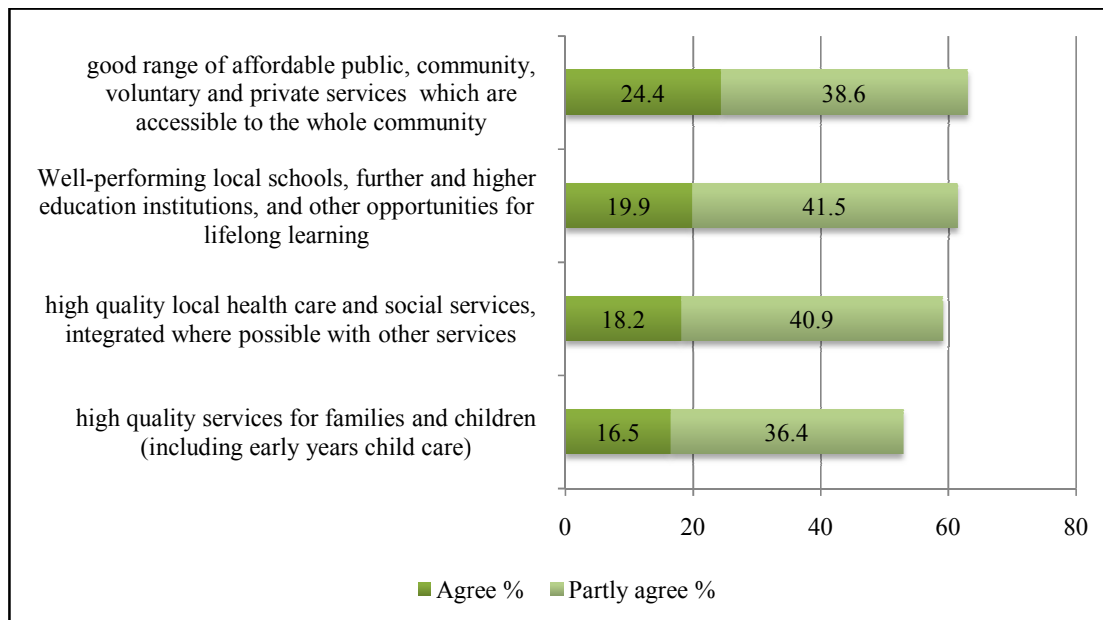
Category 7 - Well served: Table 10 and Graph 8 related to well served category indicated that around 60% of the trainees believe their community have "good range of affordable public, community, voluntary and private services which are accessible to the whole community", "well-performing local schools, further and higher education institutions, and other opportunities for lifelong learning" and "high quality local health care and social services, integrated where possible with other services". Nevertheless, around 36.9% of the trainees disagree with the statement that their community has not "high quality services for families and children".

Table 10: Well Served Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
Well-performing local schools, further and higher education institutions, and other opportunities for lifelong learning	35	19,9	73	41,5	54	30,7	14	8
high quality local health care and social services, integrated where possible with other services	32	18,2	72	40,9	61	34,7	11	6,3
high quality services for families and children (including early years child care)	29	16,5	64	36,4	65	36,9	18	10,2

good range of affordable public, community, voluntary and private services (e.g. retail, fresh food, commercial, utilities, information and advice) which are accessible to the whole community

43 24,4 68 38,6 58 33 7 4

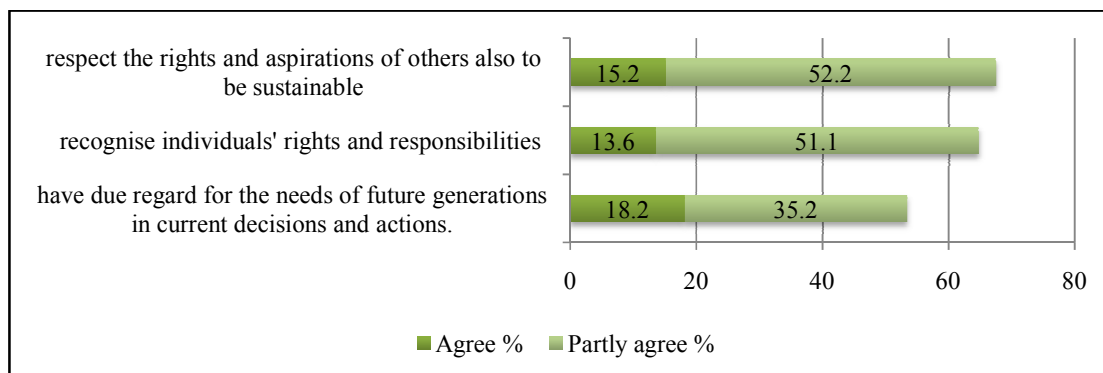


Graph 8: Well Served Category

Category 8 - Fair for everyone: Table 11 and Graph 9 related to fair for everyone category show that most of the trainees (around 60%) believe their community “respect the rights and aspirations of others (both neighbouring communities, and across the wider world) also to be sustainable” and “recognise individuals' rights and responsibilities”. Nevertheless, 38.6% of trainees believe that their community have not due regard for the needs of future generations in current decisions and actions.

Table 11: Fair for Everyone Category

<i>My community offer</i>	Agree		Partly agree		Disagree		No idea	
	f	%	f	%	f	%	f	%
recognise individuals' rights and responsibilities	34	19,3	79	44,9	50	28,4	13	7,4
respect the rights and aspirations of others (both neighbouring communities, and across the wider world) also to be sustainable	24	13,6	90	51,1	50	28,4	12	6,8
have due regard for the needs of future generations in current decisions and actions	32	18,2	62	35,2	68	38,6	14	8



Graph 9: Fair for Everyone Category

CONCLUSION

This current research which was conducted in Kutahya city, Turkey revealed the strong and weak issues which were determined by teacher trainees for their community. According to the questionnaire findings, social studies teacher trainees' perceptions of their community regarding various components of sustainability are far from being satisfactory. The general results based on the average score showed that teacher trainees' perception of their community in terms of sustainability was under the mean point. This finding is quite similar to the research of Alkis (2012) which was conducted in Bursa city with teacher trainees at Uludag University, in Turkey. It can be concluded that there are some necessities which indicated in findings for these community towards sustainability. Besides, as stated before, the coverage of sustainable development in Turkish universities primarily focuses on environmental aspects, but relevant social and economic issues are not sufficiently covered in a balanced manner. Therefore, there is a need for holistic ESD that incorporates three dimensions of SD in teacher education programmes.

It is clear that the most people want to live in a place where they know their neighbours and feel safe. A place with good homes, local shops, lots of jobs and opportunities for young people to get a good education (Cited in Bell, 2011). Through education, it can be possible that students, their families and all community to learn the values, behavior and lifestyles required for a sustainable future and for positive societal transformation. It is obvious that teachers can influence students to develop their own commitments to a more sustainable world. The study findings shed light on teacher trainees' perception of their community regarding various components of sustainability and depict a picture of the current situation. Also, further studies along these lines would be very useful in other countries, since it is vital to revealing the current situation of different communities on an international scale.

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