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Message from the Editor-in-Chief

Hello from TOJNED

TOJNED welcomes you. This journal was initiated in January, 2011 to share knowledge with researchers, innovators, practitioners and administrators of education. We are delighted that more than 198000 researchers, practitioners, administrators, educators, teachers, parents, and students from around the world had visited TOJNED since January, 2011. It means that TOJNED has diffused successfully new developments on educational science around the world. We hope that the volume nine issue four will also successfully accomplish our global educational goal.

I am always honored to be editor in chief of the TOJNED. Many persons gave their valuable contributions for this issue. I would like to thank to all reviewers.

For any suggestions and comments on the international online journal TOJNED, please do not hesitate to contact with us.

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BUILD AN ATTITUDE SCALE MEASURING ATTITUDE TOWARD MATHEMATICS

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ABSTRACT

The proposed study is to build an attitude measuring scale to measure attitude toward mathematics. The inquiry provides the baseline for understanding the reasons leading students to drop out of high school and others not to take math classes at university. However, an attitude scale is a complex undertaking and demands detailed research and comparative studies on theoretical constructs that define attitude, a working definition and comprehensive understanding of attitude in psychology and its connection with measuring attitude toward mathematics. Thus, different literature crystallizes attitude in cognitive psychology as psychological function, which constitutes affect toward social objects driven by goals, plans, cognitive responses, belief, and attraction toward an action. However, other literature takes the definition of attitude further by defining attitude toward mathematics as the psychological response in the domain of enjoying the subject, the belief that one is good or bad in mathematics, and the affect with emotional disposition toward mathematics, with varied definitions. In addition, the rationale for building an attitude measuring scale draws on the impact of the scale on measuring attitude toward mathematics for teachers, students, and stakeholders to progressively monitor earlier positive or negative attitude changes toward mathematics and make interventions by taking corrective actions.

1.0 INTRODUCTION

The goal of the study is to build an attitude measuring scale with numerical significance of student attitude toward math as one single most important factor influencing high school dropout rates for students studying mathematics as a subject at different academic levels. Attitude is fundamental in determining student commitment toward solving math problems both in class and in one's life, out of class. Thus, attitude can be either positive or negative. Attitude plays a key role in determining behavioral actions of a student and "It is our attitude at the beginning of a difficult task which, more than anything else, will affect its successful outcome" Chamberlin (2010). To determine the key driving reasons underlying attitude as an influencing factor toward mathematics completion rates, a scale assigned numerical values is proposed to provide a means of measure attitude showing the relationship between attitude, high school dropout out rates, and the failure of students to take mathematics at university level (Brecklers, 1984). Typically, the proposed attitudinal inquiry will draw on attitude as an influencing factor in the rationale for students hating or liking mathematics, and taking math classes at university. That provides compelling reasons strongly correlating the learner's attitude to their mathematics performance as a leading cause of dropout rates, and failure to take mathematics at university. Conventional wisdom has largely shown a strong relationship between performance in mathematics and attitude and the future carriers of the learner in the subject. However, research in the academic discipline on developing a scale on math performance done show-varied reasons for relating attitude to performance, completion rates, and the desire for students to take math classes at university. Thus, making the latter a key area of research shows a distinct gap in knowledge in the relationship between math performance, completion rates, and a numerical scale-measuring attitude toward mathematics (Ma, 1997). Despite that, a number of researches on different scales showing the relationship between the attitude and math performance will provide the baseline and body of knowledge for the proposed research. One such inspiration is the scale developed in 1976 referred to as the Fennema-Sherman Mathematics Attitude Scales developed in 1976 (Fennema & Sherman, 1976). The scale by Fennema and Sherman (1976) contributed a rich body of knowledge toward building the proposed scale to measure attitude toward mathematics. During its introduction, the scale deviated from the initial purpose of measuring attitude toward mathematics of female students and incorporated the entire student body. The scale consisted of four subscales used to measure the confidence, usefulness, perception of the teachers, and male dominance in the student. However, further research into attitude toward mathematics scales with new changes makes it defunct for conducting any further research. However, development of scales to measure attitude toward mathematics made strides with the introduction of the Attitudes Toward Mathematics Inventory (ATMI) with Tapia and Marsh (2004) as the proponents. The 40 item measuring scale focused on measuring motivation, enjoyment, self-confidence, and value factors to measure attitude toward mathematics. Other scales include the Inventory of Affective Aspects of Schooling (IAAS) that incorporated attitude, teacher quality, and social psychological climate as distinct factors to measure that lacked the class as the appropriate environment to measure attitude toward mathematics. Thus, the study considers working definitions of attitude, attitude toward mathematics, and borrows knowledge from other scales and considers the impact that the scale could have on attitude change toward mathematics.

1.1 Statement of the Problem

A significant number of students develop negative attitudes toward math at earlier stages of their academic life, hardly completing their studies, with a significant number dropping out of their high school life before graduating and the rest who progress academically strongly considering not taking math at university. Thus, the rationale for building an attitude measuring scale to provide teachers and other stakeholders in the academic an attitude measurement scale assigned numerical values to determine the relationship between attitudes, school dropout rates for high school students. It also establishes the connection between attitude and the avoidance of students to take math classes at university summed as the impact of attitude measuring scale on the attitude of learners toward mathematics. The proposed scale provides numerical values as indicators of the relationship between math performance and student attitude in their math learning life.

1.2 Background of the Research

Building a numerical attitude scale to determine the influence attitude has on students dropping out of school based to their attitude toward mathematics, and the failure to take mathematics at university forms a strong background of the proposed research. Different factors, which influence student attitude toward mathematics, directly influence their math performance, dropout rates, and willingness to take math classes at university. In the context of the current research, attitude is the disposition of the student toward math and their willingness to use math for problem solving. Many parents and students have expressed strong negative feelings toward mathematics as one of the factors influencing failure of students to continue learning math, which leads learners to leave school while others fail to take math classes at university. Thus, either attitude expressed negatively or positively has the negative expression based on strong negative feelings having adverse effects on the learner in math performance. A significant number of educators have expressed strong feelings toward math performance as affecting the learner at different levels with the negative attitude leading to the adverse effects on the learner's educational life. Thus, attitude strongly affects continued interest in math. Conversely, if attitude is negative, its implications are likely to develop a negative effect in the learner and lead one to the negative emotions while continuing to learn mathematics. To fully capture and comprehensively understand the complete impact of attitude on math performance on the learner, building an attitudinal measurement scale will form the baseline of the proposed research. The baseline intention is to provide teachers and other stakeholders the means to numerically determine attitude on a scale, evaluate the impact of attitude at all stages of the learning process, and identify the trend in learning math and student's continued interest in math at different levels of the student's academic life. That could position teachers and other interested parties including parents to identify weak points and take corrective actions at early stages in the academic life of learners. In the context of the proposed research, different definitions of attitudes toward math developed designate attitude in simple terms as a negative disposition toward math (McLeod, 1994). However, a knowledge gap appears in the definition coined by McLeod (1994) without incorporating positive emotional disposition toward math, a definition taken a notch higher by researchers including Ma and Kishor (1997), who affirmed another definition of attitude toward math. Thus, Ma and Kishor (1997) define attitude as "an aggregated measure of a liking or disliking of Mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at Mathematics, and a belief that Mathematics is useful or useless" (Ma & Kishor, 1997). Thus, a definition of attitude toward math in the contexts of the proposed research embodies the like or dislike of mathematics, a belief in the ability or inability to solve mathematical problems mathematically, and sense that one does not do and cannot do well in mathematics at any academic level or disposition. Thus, experience, and the continued development of belief toward math play a significant role in determining the disposition of the student toward math and the relationship with the attitudinal scale.

1.3 Context of the Research

The proposed study will draw on available literature on attitude and the variables that influence attitude. In addition to that, working definitions of attitude and the environment to conduct the study will also constitute the study. A number of studies have been developed to quantify attitude by assigning attitude to a numerical scale. Numerical values are, however, difficult to assign into a scale due to varied definitions of attitude and the difficulty of quantifying attitude, based on literature and research on attitude. However, the proposed research will endeavor to establish working definitions of attitude by commencing the study on building attitude-measuring scale to measure attitude toward mathematics from the psychological perspectives including belief, anxiety, emotions, and other variations. Thus, the study will constitute an endeavor to build an attitude measuring scale constituting of a translation of psychological factors into empirical scientific facts measurable on a numerical scale. Thus, the study will endeavor to answer research questions on attitude in its wide context, methods for measuring attitude, the attitude construct validities, and the relationship to attitude toward mathematics. Thus, the measurement of attitude revolves around key factors such as belief, anxiety, emotions, and other factors identified in the study.

1.4 Research Questions

1. What is attitude in social psychology?
2. What is the definition of attitude in its various contexts?
3. Is attitude measurable on an empirical scale?
4. How can the attitudes toward mathematics get change, what are the key concepts underlying attitude change toward mathematics?
5. How is attitude toward mathematics measured and what are the challenges associated with building an attitude measuring scale toward mathematics?
6. What is the impact of attitude measuring scale of attitude toward mathematic?

1.5 Significance of the Study

The strength of the relationship between attitude and students' math performance in the academic discipline demands a numerical scale that shows variations in attitude in relation to math performance and school completion rates. When students develop negative attitudes toward math at earlier stages of their studies, their school completion rates significantly decline with a drastic rise in the number leaving high school noted. That impels a strong cause for concern especially that the negative attitude or hatred for math developed at earlier stages of their studies continue into their university life, causing them to refuse to take math, a trait that continues into their entire lives. To find the connection between attitude and school dropout rates, and future prospects of students taking math at higher academic levels, the proposed research revolves around the rationale to build a numerical attitudinal scale showing the significance of the relationship between attitude, math performance, dropout rates, and taking math at university level. Thus, a research into the connection between attitude and math performance focuses on analytical evaluation of available literature on the development of attitudinal scale showing the influence of attitude on student math life. Different researchers have developed attitudinal scales showing the impact of attitude toward math performance, school dropout rates, and the trait that limits students taking math at university level. Thus, different research approaches on attitude and math performance have shown authors including Dutton (1954), Dutton & Blum (1968) basing their measurements of attitude on the Dutton scale that specialized on feelings toward arithmetic as one variable in math performance. Others authors later developed math attitudinal measurements emphasizing on math enjoyment, taking a unidimensional nature particularly by (Erlandson, Harris, Skipper, & Allen, S1993). The development of the of the attitude measurement scale has taken different dimensions based on different variables such as anxiety to numerically determine the rationale behind attitude and student dropout rates and their future relationship in their math academic life. However, in the context of the proposed research, a significant relationship between attitude, math performance, school dropout rates, and failure to take math at university provides a numerical scaling for educators and other stakeholders such as parents and teachers to evaluate the attitude of learners toward math and take corrective actions at earlier stages of the learner. Typically, projections of the proposed research provides a rich body of knowledge as guiding principles for the development of corrective measures based on underlying factors influencing attitude toward math, enabling further research into corrective attitudinal actions during the student's carrier. One such inspiration is the scale referred to as the Fennema-Sherman Mathematics Attitude Scales developed in 1976, among other scale that shall provide knowledge contributions toward the study.

This study will undertake to build an attitude measuring scale by considering the basic working definitions of attitude in social sciences coined by different researchers in the context of attitude. This study will further examine in detail attitude construct validity, study in detail on attitude and its effects, examine different authorities and literature on attitude toward mathematics, and empirical approaches of measuring attitude toward mathematics. The study shall include techniques teachers and educational stakeholders can use to change attitude toward mathematics, the key concepts underlying attitude change toward mathematics, and the impact of the developed scale on the attitude of the student toward mathematics.

2.0 LITERATURE REVIEW

The intent of the proposed study is to build an attitude scale to measure the attitude of learners toward math. "It is our attitude at the beginning of a difficult task which, more than anything else, will affect its successful outcome" (Van Wagner, n.d.). Reinforced by McCleod's (1994) belief, which relates attitude toward mathematics to success in mathematics, Ma and Xu (2004) view the proposition by McCleod (1994) as true and view teacher's contribution in creating positive attitude in the student as a competing element in enabling students to complete and graduate at high school while others taking math classes at university. The scale constitutes numerical values on a numerical scale to determine the numerical relationship between attitude toward math that provides the baseline for understanding student drop out school rates, why students hate mathematics, and why students at university fail to take math classes. A significant number of researches conducted to build attitude-measuring scales have evolved over time based on new and challenging issues

related to attitude measurements experienced over time. Thorough research into the definition of attitude from physiological perspectives, underlying meaning of attitude toward mathematics, techniques for measuring attitude toward mathematics, attitude and math performance, and implications of attitude on students' performance will form a critical section of the literature review for the proposed research. In the context of the proposed research, literature associated with theoretical constructs will provide the key components in informing the research. Critical literature on physiological attitude in the endeavor to build an attitude scale will commence with a study of authorities that have researched in the field on attitude in psychologists. Thus, an understanding of attitude as defined by psychologists provides the basis for building the attitude scale.

2.1 Attitude in psychologists

In social psychology, the embodiments of theoretical constructs of attitude are recognized in emotions, cognition, and the behavior of individuals based on the propositions by (Newbill, 2005). Newbill's (2005) theoretical proposition draws on attitude as a social function that incorporates expressions, defensive functions, and utilitarianism. Thus, the theoretical foundations of Newbill's (2005) arguments are, analytically, an aggregate of varied views on attitude as a physiological function that propels the student to like or dislike mathematics and eventually make decisions that are in favor or out of favor with taking mathematics in their carrier path. Decisions made by student have implications on the students' academic lives. A number of authorities in social psychology to consider in the proposed study include (Dillard, 1994). Dillard (1994) has dwelled on emotion by linking it with the thinking of an individual, which drives the tendency in an individual to perform certain actions or exhibit specified behavior. Thus, in Dillard's (1994) assessment of attitude, the key components recognized as affecting attitude link to the cognitive process of the individual learner. Drawing on Dillard's (1994) findings shows attitude as strongly linked to attitude objects with math as a typical example, which is the attitude object. Dillard (1994) further shows that attitude emanates and is strongly associated with the activities in the brain and the long-term memory sections. The baseline component is the emotional node, which when subject to manipulation, can lead to attitude change. Therefore, a link between attitude and emotion specifically drawing on emotion nodes allows one to manipulate attitude for the better or for the worst. Zimbardo et al., (1999) relates attitude with positive and negative observations on different objects in the environment while Bain (1927) internalizes attitude in an individual as relatively stable and defines it as "the relatively stable overt behavior of a person which affects his status" (Bain, 1927). Thus, attitude is a strong pointer of an individual's status in relation to variables such as attitude toward math and the resulting math performance in the context of the proposed study. On the other hand, (Erlandson, Harris, Skipper, & Allen, S1993), theoretical contribution to attitude leads to the definition of attitude in the context of judgment by asserting that attitude is "a susceptibility to certain kinds of stimuli and readiness to respond repeatedly in a given way—which. That is possible toward our world and the parts of it which impinge upon us" (Erlandson, Harris, Skipper, & Allen, S1993). Thus, the judgmental model derived from this definition shows attitude to consist of three key issues including cognition, behavior, and affection. Affection relates to emotion, which defines an entity's preferences. In Lumley's (1928) arguments, cognition provides the baseline for evaluating prevalence of individual students toward mathematics, which shows the belief held by the students toward mathematics. In the context of Lumley's (1928) studies, attitude draws from experience of or from the learning process, with a basis on observations.

Studies by Efklides, Papadaki, Papantoniou and Kiosseoglou (1997) show attitude as a dynamically behavioral element in the human mind that is susceptible to change based on the driving motive for actions. Dillard (1994) takes the argument further and defines attitude in relation to the activity of an organism and other variables. Efklides, Papadaki, Papantoniou & Kiosseoglou's (1997) definition therefore shows attitude to be "the totality of those states that lead to or point toward some particular activity of the organism. Attitude, is, therefore, the dynamic element in human behavior, the motive for activity" (Efklides, Papadaki, Papantoniou & Kiosseoglou, 1997). Efklides, Papadaki, Papantoniou and Kiosseoglou (1997) do not seem to vary his definition from other authors, but provides a less distinct definition of attitude. Nonetheless, when combined with different authors, a common working definition relates attitude to the impelling motive for action emanating from the brain as a cognition process. Thus, despite the different definitions of attitude and the relationship between attitude and resulting actions, it is commonly agreed. However, an analytical process that attitude relates to three common factors, which include cognition, which shows one's thinking process influenced by attitude, feelings developed under the influence of attitude, and behavior that influences an individual's actions due to the influence of attitude (North, 1932; Lumley, 1928; Bain, 1927; Zimbardo et al., 1999; Newbill's, 2005 & Dillard, 1994). Dillard (1994) defines attitude in relation to the dynamism of the human nature, the tendencies in the human nature, and motivational issues influencing activity. On the other hand, Lumley (1928) dwells on stimuli, repetitive actions, and the impact such actions have on an individual. The key words in Bain's (1927) definitions include status and the placement attitude has on an individual in relation to intrinsic behavior. Zimbardo et al., (1999) theorize attitude based on positive and negative evaluations. On the other hand, Newbill (2005) defines

attitude in the context of utilitarianism while Dillard (1994) links attitude with the thinking of an individual and resulting actions.

In the proposed study, above literature sources and authors provide definitions of attitude proposed to form the baseline of the Dissertation in developing the proposed attitude measurements scale. In addition to that, in the proposed Dissertation, additional sources will provide further definitions of current definitions and views developed with time on attitude.

In the proposed study, a provision for change of attitude will provide the baseline for establishing the hope that the proposed scale will help teachers establish methods and procedures to change the attitude of the learner toward math. The proposed scale provides numerical values on a scale that shows the trend in the performance of the learner in relation to the learner's attitude to attract positive interventions. These interventions enable teachers to change the attitude of the learners at earlier stages when an observation of a drop in attitude on the scale occurs.

In the study, it could be informative to establish the actual meaning of positive and negative as highlighted elsewhere in the paper. Thus, in the proposed research, the terms positive and negative draw from definitions of attitude presented above. However, other authors take the definitions to another level by arguing that relating attitude to affection alone is simplistic. However, a definition that integrates the definition with additional factors including belief, emotion, and behavior as already discussed in the paper compound to provide working definitions of positive and negative attitude in a learner toward mathematics (Hart, 1989). In simplistic definitions, positive attitude implies a positive emotional disposition of the learner toward mathematics. On the other hand, negative attitude implies a negative disposition of the learner toward mathematics. In the context of the multidimensional nature of math definition, negative and positive attitudes the relationship established between emotion, belief, and behaviors and the resulting interactions between these components. However, a critical evaluation of the latter definition shows a failure to link positive and negative attitude to some scale. Therefore, the need to search for further comprehension of positive and negative, especially in relation to assigning numerical values of measuring attitude on a numerical scale. Drawing from research by Hannula's (2003) conclusions shows positive to be associated with emotion, belief, and behavior influenced by affect toward mathematics (Hannula, Evans, Philippou & Zan, 2004; and Hannula, 2003). In conclusion, therefore, the simplistic definition of positive and negative attitude toward mathematics seems to overlap complex definitions that might end failing to capture the actual meaning of positive and negative attitude toward mathematics.

Hannula (2003) and Hannula, Evans, Philippou and Zan (2004) discuss different methods used in different environments to investigate attitude, the key component in the study. One of the investigations uses essays to make the inquiry. According to the study, an essay implies in the context of the study by subjects telling their stories toward mathematics in essay form. Typically, the autobiographical essay demonstrates the feelings of attitude toward mathematics evoked in the mind of the participants. The study concentrates in evoked past feelings in the subject that call for remarks such as "how" and "who" and links their attitude toward social relationships with the mathematics. Hannula, Evans, Philippou and Zan (2004) continue to draw on one's statements made in relation to how students interpret their experiences and attitudes toward mathematics. Hannula, Evans, Philippou and Zan (2004) provided an analytical view of the essay research that could significantly contribute to the proposed paper to build an attitude scale to measure the student's attitude toward mathematics. In the study, core issues identified include vision of mathematics by the subject, emotional disposition of the learners toward mathematics, and the perceptions held by the subject r student toward mathematics.

Thus, leading to the conclusion that emotion and perceptions bear strong connections to the attitude developed by a student toward mathematics, and the likely long-term impact in graduating and taking math classes at university.

2.2 Measuring Attitude

The proposed research centers on the rationale to measure attitude on a numerical scale to justify numerical evaluations of the students' attitude towards mathematics providing empirical approaches of enumerating attitude. Thus, various literatures will provide the source of knowledge for measuring attitude as one critical component in building a measuring scale. Greenwald (1990) provides a rich body of knowledge by theorizing the measurement of knowledge by concentrating on the specifications of attitude in the theoretical constructs. In theory, Greenwald's (1990) observations propose the theory of measuring attitude to include presentation of attitude objects and representations of objects constituting attitude. Greenwald (1990) attempts to scale attitude by defining attitude as "the evaluation or affect associated with a social object" and continues with the attitude

evaluation process by incorporating theoretical constructs based on social objects. However, it is critical to borrow from Greenwald's (1990) studies in relation to attitude toward mathematics.

However, a critical review of Greenwald's (1990) approach in building a scale to measure attitude could immensely contribute to the scale building process. In the scale building process, Greenwald (1990) borrows from social scientists on their definition of attitude in the social context as discussed in the next section. The key words Greenwald (1990) borrows relating attitude include definition of attitude as a mental construct as abstract mental representations. However, Greenwald (1990) observes a critical problem in the approach of attitude as an abstract mental representation by underlying approaches developed by Breckler (1984) to focus on cognition, affect, and conative. These approaches, according to Greenwald (1990) have long been overtaken by modern researches in cognitive psychology. Greenwald (1990) studied a number of authors and different attitude measurements scales developed by different researchers in the field of psychology. In search of an appropriate measurement scale, Greenwald (1990) made several investigations and comparisons of attitude measurement scales developed previously. Greenwald (1990) continues with the development of attitude measurement scales by considering social objects incorporated in measuring attitude universally. Thus, the measurement of attitude could be toward any social object. One of the social objects under consideration is mathematics.

The proposed research will therefore review different attitude measurements scales to provide a concrete basis for borrowing knowledge from the pioneers who had developed attitude based on different theoretical foundations. One such attitude measurement scale developed by Osgood was the semantic differential technique. Greenwald (1990) observed that Osgood, Suci, and Tannenbaum in their 1957 findings had drawn from a number of judgments on bipolar evaluative scales ranging from -3 to +3 at unit intervals to develop the semantic differential measurement method. Negative values signified bad attitude while positive values signified good attitude. However, the need to establish construct validity of the attitude measurement scale could reinforce the concrete facts about the validity of attitude measurements. In that context, Greenwald (1990) endeavored to draw on the vast body of experimental investigations conducted by different researchers by focusing on observations and findings according to reports by Ronis, Baumgardner, Leippe, Cacioppo in findings presented by Greenwald (1977). In their findings, Ronis, Baumgardner, Leippe, Cacioppo as reported by Greenwald (1977) made an attitude measurement scale based on persuasion effects that has found widespread acceptance in modern psychology on measurement toward change.

Contributions in attitude measurement scales were largely done by a wide selection of researchers, an approach borrowed by Greenwald (1990) as one key contributor to modern measurements of attitude. One such key source of knowledge were the contributions made by Likert (1932). Likert (1932) used items occupying extreme positions with an equal bearing on the scale with unit spacing. Thus, findings by Osgood, Suci, and Tannenbaum in their 1957 presented by Greenwald (1990) and Likert (1932) agree on their attitude measuring scale. Other contributions made towards attitude measuring scales included that of Wicker that showed a strong relationship between attitude and behavior, later on developed by other researchers in the field of attitude measurement. Thus, in an endeavor to develop attitude measurement scale, two key factors have surfaced. These include belief and a series of attributes of the belief that variedly related to attitude, and the characteristics of the attributes that relate attitude to a measurement scale. However, a lingering inquiry arises as to the extent of the validity of the construct of the attitude concept.

2.1.1 Attitude Construct Validity

The validity of the attitude measurement scale reinforces the confidence developed when using attitude-measuring scale to evaluate the level of attitude toward an object. The derived confidence from the measurements obtained from the attitude measuring scale reinforces the empirical evidence required to demonstrate confidence in different scales such as interval scale. Nonetheless, Coombs, Dawes, & Tversky (1970) argue that numerical values assigned attitude on interval scale lack the ability to drive into the mind of the user of the scale the confidence about empirical predications of behavior. That reinforces the concern that behavior is difficult to measure on a numerical scale. Thus, in building attitude-measuring scale, Breckler and Wiggins (1992) strongly argue that the attitude-behavioral problem presents strong challenges in the field of social psychology when developing an attitude measurement scale. In addition to that attitude behavior problem, there is the replication problem associated with attitude measurement scale. To overcome the challenges associated with building an attitude measurement scale, the inquiry will search deeper into possible connections between attitude and its effects.

2.1.1.1 Attitude and Assigned Values

Myers and Myers (1980) provide a ground to seek for a solution to the problem of replicating measurements on attitude and the significance of the effects in influencing attitude in an individual. The rationale of

establishing concrete relationship between attitude and assigned numerical values and their universal impact on different individuals were findings shown by Roberts (1992) as the halo effects. Landy and Sigall (1974) showed in their studies that the halo effect duplicated across the field of psychology showed that individuals have a tendency to develop negative or positive feelings about objects in their environment. The halo effects thoroughly researched by Higgins (1970) provided results showing some strong relationship between attitude and the behavior of individuals. Other factors included in the study included the similarity effects, a fact argued by Higgins (1970). Higgins (1970) theorized that varying degrees of agreement are possible with different subjects agreeing on common numerical values. In addition to that, Rosenbaum (1986) realized that a strong link between attitudinal changes and an individual relied on attitudinal agreement. On the other hand, Higgins (1970) and Greenwald (1969) impressively showed cognitive response effect's strong correlation with the liking of an object based on the cue of the subject. On the other hand, repeated experimentation of the above relationships between attitude and the variables strongly showed a repetition of similar results that were strong and robust. Thus, attitude bore a strong relationship with the respondent's behavior.

In conclusion, there is strong evidence to link the measurement of attitude to a linear scale. In addition to that, the measurement of attitude should draw on indirect measurements rather than direct measurements. That strongly correlates with the argument that strongly relates attitude with the cognitive process of the mind. It is critically valuable to consider the measurement of attitude based on the attributes of conscious and unconscious measurements of attitude. It is also important to consider the environment attitude is measured as a direct variable attribute of attitude. With the findings in mind, then the importance to attach the measurement of attitude toward mathematics forms the basis of the proposed study.

2.3 Attitude toward Mathematics

Having considered theoretical definitions of attitude, it is imperative to relate these definitions to the proposed study on attitude toward math. Hart (1989) researched and defined attitude toward math in the context of enjoying the subject or not enjoying the subject. Hart's (1989) dwells on the definitions based on two key words, enjoyment and non-enjoyment of mathematics. Thus, according to Hart (1989), enjoyment and non-enjoyment are the driving forces in defining math attitude when developing the attitude scale. The context of enjoyment and non-enjoyment revolves around the dislike or liking activities associated with math activities. In addition to definition proposed by Hart (1989), attitude renders one to determine the success rates or unsuccessful rates of a student in math performance. Hart (1989) particularly focuses enjoyment and dislike of math with repeated failures in math performance as a strong indicator leading to the development of negative attitude and belief that one is not good in mathematics. The resulting attitude leads the student to view math as a useful or useless subject. In Hart's (1989) arguments, the belief developed due to the attitude in math leads students to develop a strongly embedded belief of one's inability to solve mathematical problems and consent defeat. Accepting defeat leads to an entrenched negative attitude toward mathematics. Hart (1989), on the other hand suggests repeated success to indicate development of a positive attitude toward mathematics. However, Hart (1989) seemed to fall short of providing a scale with varied points of measures to measure dwindling attitude or developing attitude toward mathematics and its correlation to dropout rates and lack of desire to conduct math classes at university. Thus, Hart (1989) shows positive and negative measures of attitude as the most significant factors.

Zan and Martino (2007) have taken the definition of attitude toward math into the next level. Zan and Martino (2007) endeavored to show the definition of attitude toward mathematics as an area that has received inconclusive research and attempts to suggest the need for further research in attitude and attitude towards mathematics. Thus, Zan and Martino (2007) viewed available definitions to show a gap in knowledge. Zan and Martino (2007) again took the proposition for further research by coining two pronged definitions of attitude toward mathematics to include the degree of affection toward mathematics and draws on emotional dispositions of the learner. The literature of Zan and Martino (2007) falls short of integrating the cognitive element in the definition of attitude toward mathematics. One critical factor not experienced in the definition by DiMartino and Zan (2001) was the overreliance of paper work and pencil, which again fails the test of evaluating the emotional disposition of the learner. Nonetheless, the theoretical definitions of attitude toward mathematics by Zan and Martino (2007) serves to provide one of the baselines in conducting the proposed study in building a scale to measure attitude toward mathematics and the influence attitude has toward dropout rates from high school and refusal of students to take math classes at university.

Haladyna, Shaughnessy and Michael (1983) have incorporated the component of emotional disposition in their key definition of attitude towards mathematics. These authors fail to capture issues related to individual behavior, the learner's cognitive capabilities, and the learner's emotions toward attitude. Haladyna, Shaughnessy and Michael (1983) view attitude and define attitude in the context of math performance in class.

However, it is critical to incorporate positive and negative attitudes as key elements in defining attitude in the context of DiMartino and Zan's (2001) definition. On the other hand, definitions of attitude toward mathematics appear to dwell and direct to positive and negative attitudes. None of the authors have researched and shown a scale of negative attitude in mathematics, though, positive attitude can be scaled to provide a positive measure of attitude. In addition to that, a measurements scale constituting positive attitude on a numerical scale allows teachers and other stakeholders to determine the level of interest of the student in mathematics. That enables teachers and stakeholders keep track of the progress of the student's interest in mathematics, and determine the probability of the student dropping out of school due to their dislike of mathematics and failure to take math classes at university.

McLeod (1994) provides another working definition of attitude toward mathematics. In McLeod's (1994) proposition, attitude toward mathematics is a positive and negative disposition of the learner towards mathematics with strong attachments to individual emotional beliefs. On the other hand, "an aggregated measure of a liking or disliking of Mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at Mathematics, and a belief that Mathematics is useful or useless" (Ma & Kishor, 1997). Thus, in the light of the definitions, an attitude scale provides a clear indication of the tendency of the learner at different stages of the learning process to engage in math activities or to avoid math activities. In the definitions presented above, the impact attitude has towards math performance have not been shown to have an impact on the progress of the student in math performance, calling for further research in the field.

2.4 Measurements of Attitude toward Mathematics

To build an attitude measuring scale to measure attitude toward mathematics as an underlying factor that shows underlying reasons for students leaving high school and others avoiding to take math classes at university, a number of sources proposed focusing on attitude toward mathematics are considered in the current proposal. One of the attitude measuring scales includes the scale for measuring affect. Affect was considered as one of the key factors having strong relationship on the psychology of the learner toward mathematics as argued by Greenwald (1990) in their attempt to scale attitude by defining attitude as "the evaluation or affect associated with a social object" (Greenwald, 1990). Thus, drawing from the definition by Greenwald (1990), affect is observed as an attitude measurement scale toward mathematics. According to Chamberlin (2010), affect as one of the elements that influence attitude toward mathematics shows attitude as the motivating factor for students to develop a specified attitude toward mathematics. Analytically, the contention that motivation might not implicitly define affect, but might make the term redundant calls for further inquiry into "affect" in relation to attitude in mathematics. Thus, Chamberlin (2010) takes the definition of affect further by incorporating variables that might be included in the scale to include factors including "anxiety, aspiration(s), attitude, and interest, locus of control, self-efficacy, self-esteem, and value". However, affects is discussed in another section in detail (Bandura, 1982 and Singh, Granville & Dika, 2002).

One of the scales developed for college students to measure the attitude toward mathematics of college students was the Revised Mathematics Anxiety Rating Scale (RMARS) by (Baloglu & Zelhart, 2007). However, little enthusiasm could greet the scale due to its complexity and context of the research.

2.4.1 Challenges

However, the measurement of affect comes with a number of challenges in building the attitude measuring scale when expressed as a construct. The complexity of a construct draws on the complexity of measuring constructs in psychology due to the non-attributes associated with variables such as anxiety, and other variables used in the measurement of anxiety with its sub-components. Thus, from the perspective of numerical scales, it is clear that a common agreement and perspective of measurements scales such as the meter or the inch have commonly understood implicit meanings. Typically, therefore, quantifying psychological affect is difficult unlike measuring height and width. Other factors to include are intensity, target, and direction as specified in (Chamberlin, 2010). In the attitude building scale, target defines the idea and feeling directed toward mathematics and the consequences of directed feeling and the resulting attitude toward mathematics. On the other hand, intensity defines the strength of the feelings that learners develop toward mathematics, which has direct implications on the options learners take in either dropping out of high school or opting not to take math classes at university. Thus, Chamberlin (2010) illustrates the measurements factors as illustrated in table

1 below.

Table 1, adapted from Journal of Mathematics Education.

Factors	Value Anxiety Aspirations Interest Locus of control Self-esteem self-efficiency
Intensity	
Direction	
Target	

The items above are selected by the respondent to determine their attitude toward mathematics based on the impact the items are perceived to have on the student.

Elsewhere in the paper are identified key factors influencing attitude. These, according to the current study, and from psychological perspective include cognition, behavior, and belief, among others. One element incorporated in building an attitude measuring scale to measure attitude toward mathematics is anxiety. Thus, an anxiety rating scale build to measure the attitude of learners toward mathematics is worth analyzing for the proposed study.

Richardson and Suinn (1972) developed an attitude measuring scale referred to as the Mathematics Anxiety Rating Scale (MARS). According to the study, the attitude measuring scale suffered from critical limitations including inability for its use in lower educational levels making it not worth much analysis. Despite that, the scale has a significant level of validity at its level of use. On the other hand, one of the most significantly used attitude measuring scales toward mathematics was the Fennema-Sherman Mathematics Attitude Scale (FSMAS). In their studies, anxiety was excluded from the as it showed a strong correlation with the confidence scale. In the proposed attitude building to measure attitude toward mathematics study, FSMAS consists of a shortened version of FSMAS, which constitutes 108 items. The rationale behind shortening the attitude measurement scale is to reduce the number of items and makes its administration universal and widely applicable on different environments. In addition to that, the 108 items, as mentioned elsewhere, is time consuming particularly making it difficult for respondents to complete, since each of the 12 items takes approximately 45 minutes. Thus, the scale demonstrated in table 2 below show a number of variables used in the short form of FSMAS scale. The attitude measuring scale shows a comparison of items used in the study with the methods used summarized in the same table 2 below.

Table 2

Scale	(Fennema & Sherman, 1976a) (1)	Full-length (present study) (2)	All-pos method half-length (2)	Factor analysis half-length version (2)
Usefulness of Mathematics	0.88	0.88	0.73	0.84
Attitude Toward Success in Mathematics	0.87	0.77	0.52	0.72
Confidence in Learning Mathematics	0.93	0.87	0.68	0.87
Effectance Motivation	0.87	0.88	0.71	0.73
Mathematics as a Male Domain	0.87	0.81	0.58	0.81
Mathematics Anxiety	0.89	0.88	0.72	0.88
Father's Attitude	0.91	0.88	0.72	0.87
Mother's Attitude	0.86	0.87	0.71	0.87
Teacher's Attitude	0.88	0.88	0.72	0.80
Total scale	—	0.96	0.90	0.93

Importantly, a range of variables used to measure the attitude of the learner toward mathematics indicates variations in responses to each item. A number of items shown in table 2 above have a strong influence in determining the attitude of the learner toward mathematics and final implications in completing mathematics and opting to take math classes at university. Typically, the responses vary from the usefulness of mathematics as shown above with resulting responses based on “Fennema and Sherman 1976a”, a full-length study of the literature being analyzed, all-pos methods responses, and the factor analysis of the full-length version.

An analysis of the above scale shows variations in reliability analysis. In the above study, a 0.96 alpha reliability registered for the full-length version of the FSMAS that is higher than the shortened version of the FSMAS attitude measuring scale. The shortened version of the scale shows a similar pattern in reliability analysis. A critical analysis of the scales also shows that split-half reliability used instead of alpha coefficients showing the use of methods based on factor analysis as more reliable than All-pos method as illustrated in table 2 above. One critical issue to consider is items selection for the study.

One other scale developed to measure attitude toward mathematics was the Attitudes Toward Mathematics Inventory (ATMI). In this scale, a number of issues were taken into consideration. Typically, the Attitudes Toward Mathematics Inventory (ATMI) consisted of 49 items with important factors deemed importantly influencing attitude incorporated. Though showing a slight variation with other attitude measuring scales, a critical evaluation of the method showed the scale to consist of “confidence, anxiety, value, enjoyment, motivation, and parent/teacher expectations”. Evaluating the attitude measuring scale shows the scale to consist of anxiety, highlighted elsewhere in the current paper, enjoyment, and motivation. However, an additional factor incorporated into the attitude measuring scale are expectations from the parent and teachers. Thus, one concludes that measuring attitude draws from commonly identified factor across different disciplines and the spectrum, with a lot of analytical dependence on the psychology of the learner and user of the scale. Goolsby (1988), Linn and Hyde (1989), Randhawa, Beamer and Lundberg (1993) advances confidence as one of the items used in the measurement of attitude toward mathematics. Confidence, according to Goolsby (1988), Linn and Hyde (1989), Randhawa, Beamer and Lundberg (1993) measure the confidence of students in mathematics, and the self-concept by inculcated in the student in their performance in mathematics. Contributions by Hauge (1991), Terwilliger and Titus (1995) were in the field of anxiety as discussed elsewhere in the paper. Anxiety relates to the feelings of the student and the consequences of the feelings in the context of attitude and performance and other factors discussed elsewhere in the paper toward mathematics. The Longitudinal Study of American Youth (1990) shows a strong correlation between value and the student’s beliefs, relevance, and the worth of mathematics in real life situations. Other factors considered include enjoyment as proposed by Ma (1997) and Thorndike-Christ (1991) who related attitude toward mathematics to the degree students found pleasure in working math problems and attending math classes. Singh, Granville and Dika (2002) and Thorndike-Christ (1991) considered motivations that are discussed elsewhere in the paper and a fundamental issues driving student to attend math classes at different levels of academics development and its associated variables and implications as shown elsewhere in the paper. Motivation shows the inherent desire by students to pursue mathematics and attend math classes at university. On the other hand, to fill the gap identified in the study were the works proposed by Kenschaft (1991) and Dossey (1992). In their works, Kenschaft (1991) and Dossey (1992) identified parent/teacher expectations as compelling factors in determining attitude toward mathematics in the learner. Kenschaft (1991) and Dossey (1992) asserted that beliefs parents and teachers had on the abilities of the student in math performance were other compelling factors influencing attitude toward mathematics.

Findings from the studied by the authors Attitudes Toward Mathematics Inventory (ATMI) showed a strong relationship between the student’s attitude toward mathematics. A report by Dwyer (1993), Kenschaft (1991), and Shashaani (1995) showed that parents and teachers could strongly influence a negative or positive attitude toward mathematics in the student. However, a critical analysis of the parent/teacher item showed a strong relationship with extremely low item-to-total correlations, leading the researchers to drop the item. Typically, the parent/teacher item was dropped in favor of the peer group due to different variations of the background of the students. Harris (1995) affirmed the influence of peers in developing attitude toward mathematics as having a stronger and upper basing on the student attitude compared with parents and teachers and strongly proposed the item to be dropped.

Thus, the consensus arrived at after an analysis of the proposed items was motivation and consequences, factors strongly agreed upon by other researchers and widely used to evaluate attitude of the learners toward mathematics.

The proposed research will begin by inquiring into the factors that influence the success of the learner in mathematics. Ashcraft and Kirk’s (2001) contribution to the findings will provide a basis for studying such

factors. According to Ashcraft and Kirk (2001), long-term avoidance of mathematics significantly contributed to a negative attitude toward mathematics. The argument is that “long-term avoidance of math and their lesser mastery of the math that couldn't be avoided, high-math-anxiety individuals are simply less competent at doing math” (Ashcraft & Kirk, 2001) provides one direction in driving attitude toward math. Fennema and Sherman (1976) developed a model that relates math performance to behavior, competence, anxiety, and the interactive nature of the environment that leads to the creation of an attitude toward math. However, different authors view this argument as being too simplistic. Fennema and Sherman (1976) confound the theory proposed by Ashcraft and Kirk (2001) by incorporating 108 elements in their model assigning 45 minutes before completion under an evaluation process. However, other authorities in the field of mathematics have strongly questioned the validity and integrity of the model for measuring attitude proposed by (Fennema & Sherman, 1976).

Among the factors identified as influencing performance is belief in mathematics. Development in the area of belief provides empirical evidence on the relationship between the performances of the student math, math problem solving abilities, and making sense, thus influencing the entire attitude of the student toward mathematics. Thus, the inquiry centers on the impact of belief in influencing positive or negative attitude toward mathematics in the student and the longer term effect of belief in student graduation rates and taking math classes at university. Other factors identified by other researchers include competence. However, there is need to critically analyze of the attitude measuring scales in the proposed study as discussed below.

2.4.1.1 Attitudes Toward Mathematics Inventory (ATMI)

Attitudes Toward Mathematics Inventory (ATMI) was developed specifically to address anxiety in the learner. Tapia and Marsh (2004) contributed to the development of the ATMI scale by focusing on enjoyment, a concept discussed in another section in the paper. Analytically, that makes enjoyment one of the factors to consider in building an attitude toward mathematics measuring scale. Typically, the ATMI scale consisted of 40 items to measure the attitude of the learner toward mathematics. The basis of item construction for the study was on the Likert-format scale consisting of five alternatives to provided responses. In addition to that, item construction had its basis on Haladyna, Shaughnessy, and Michael's (1983) Inventory of Affective Aspects of Schooling (IAAS) constituting student motivation, the learning environment that included management or organizational environment, teacher quality that influences outputs from the student, and the social-psychological climate.

Critical evaluation of the above factors and drawing from other researches shows the class environment appropriately addresses the environment for studying the development of the attitude measuring scale. The rationale of using classrooms as appropriate for the study to build an attitude measuring scale to measure attitude toward math allows teachers to take notes and an interactive environment between the teacher and the student. In addition to that, responses based on the use of online tools significantly contribute to confidentiality in the study and good response rates due to the flexibility of using the scale.

2.3.0 Belief

Belief as one of the strongest factors determining behavioral characteristic attributes of a student toward mathematics has received wide and significant study.

A variety of studies proposed to form the literature review on belief provides a multipronged approach to attitude toward mathematics. Belief provides the ability for the student to meet one's own emotional needs, one of the components used to measure attitude toward mathematics and salient features of an attitude measuring scale. Research shows that when students develop intrinsic belief with the inability to solve mathematics problems or born with the inability to solve mathematics problems, there is the possibility of developing a negative attitude toward mathematics, thus, relieving a student personal responsibility. Once that belief is established, the student develops an attitude, which becomes innate leading to the conclusion that it is not one's fault, but rather mathematics is naturally difficult and that one was born with the inability to solve mathematical problems. The belief assuages guilt in the student, leading to feelings and emotions, which result into particular types of behavioral patterns toward mathematics. In addition to that, when a student believes that one's mathematical abilities are fixed at a low level, that belief gives further impetus to the behavioral characteristics toward mathematics making the student attempt to avoid mathematics at every instance of the subject. In addition to that, an individual's value system contributes significantly to the belief one holds toward mathematics. Thus, belief provides the rationale for students to fail to work hard and perform better in mathematics. A student is likely to drop out of school based on belief and the development of attitude toward mathematics that negates the student's commitment toward mathematics (McGuire, Lindzey & Aronson, 1985). Having established the rationale for the measurement of attitude toward mathematics, it is imperative to answer the question as to whether attitude can change toward mathematics due to external stimuli. Typically, the importance of studying the susceptibility to change attitude toward mathematics draws on the need to create an

environment for the learner to change the learner's attitude toward mathematics to achieve positive results such as high school completion rates and to motivate students to take math classes at university (Wood, 2000). Thus, the following study answers the questions to whether attitude can be influenced to change the attitude of the learner toward mathematics towards a specific goal (McGuire, Lindzey & Aronson, 1985).

Having established an attitude measurements scale, there is need to further the proposed research to answer the question on whether attitude can change. Typically, the rationale is to determine the susceptibility of attitude to change to allow for the use of the scale build to measure the attitude of learners toward mathematics since the attitude measurement scale is to help teachers and other stakeholders change the attitude of the learner toward mathematics positively. If attitude changes, then, the rationale of building an attitude toward mathematics measurement scale could contribute significantly toward inculcating a positive attitude toward mathematics to increase high school graduation rates and encourage students take math at university. Thus, there is the need to determine attitude change toward mathematics in the proposed study.

2.5 Attitude Change toward Mathematics

In the proposed study, attitude forms the baseline of the proposed research and is the key concept that influences student behavior. Attitude, according to observations in psychology shows a strong link between cognition and behavior. Thus, the importance to draw on theoretical propositions on attitude change to identify and evaluate approaches that teachers and other stakeholders can use to implement attitude change in the learners. Research has established various facts associating attitude toward mathematics with the student graduation rates and taking math classes at university. Thus, there is need to establish strategies to incorporate into attitude change toward mathematics in the learners.

Kolman (1938) extensively researched on attitude change and identified three key approaches teachers or instructors and other stakeholders in the education sector can use to influence attitude toward mathematics. Kolman (1938) identifies the concept of internalization, compliance, and identification as key factors in initiating change of attitude toward mathematics in the learners. Asch (1956) researched and was in agreement with Kolman's (1938) findings showing change of attitude to emanate from the consequences one experiences based on the consequences of one's actions.

2.5.1 Consequences

Consequences in the context of the proposed research are the failure of students to graduate due to negative attitude toward mathematics and refusal of students to take math classes at university. Thus, the learners, in the theoretical perspectives of Kolman (1938) and Asch (1956) agree that belief does not always relate to the consequences experienced by a learner, but strongly relates to the social outcome the learner experiences in adopting a specific attitude toward mathematics. The intrinsic driving force in the student to adopt a positive attitude toward mathematics is the response to the consciousness that one is being urged to develop a positive attitude toward mathematics. Asch (1956) borrowed from findings from a series of experiments conducted to determine the power of conformity of individuals with groups, popularly known as Asch conformity experiments. Typically, the basis of the research experiments were to determine the response rate and number of cohorts required to induce conformity by varying the cohorts from unit to a significant number, about fifteen. Findings from the research showed a strong correlation between the number of cohorts included in the study and the attitude of the cohorts. Thus, the concept of compliance draws on the need for students to be accurate and correct in math performance.

2.5.2 Internalization

Another key approach to use in influencing attitude change toward mathematics will include the internalization concept. Research findings show internalization to include a change in belief when the learner finds contents in mathematics to have intrinsic values to the learners. Thus, the change in attitude will be consistent with the learner's value system. In the proposed research, the tendency to develop a positive attitude will draw on inculcated belief in the intrinsic benefits realized by the learner in mathematics. That could strongly contribute to the development of positive attitude toward mathematics and the possibility of raising the number of students who graduate at high school and who take math classes at university.

Typically, anticipated change in attitude toward mathematics will show a strong link with individual intent in developing a positive attitude toward mathematics resulting in high completion rates and taking of math classes at university.

2.5.3 Identification

Identification is proposed to provide another approach in influencing positive change in the student by developing a positive attitude toward mathematics.

Learning and attitude change is a psychological process. Thus, identification relates to the ability of the subject to assimilate the attributes of another subject, typically, learners who have excelled in math performance and graduated through high school and learners who have taken math classes at university. Typically, identification enables learners develop emotional attachments toward mathematics. Typically, the research proposes to incorporate students on identification done by (Sandler, 1987).

However, a number of discrepancies and knowledge gaps appear in the above approaches of attitude change.

2.5.4 Attitude Change based on Emotion

In the proposed research, there is need to factor the concept of attitude change based on emotions. As mentioned elsewhere in the paper, one of the key components that influence attitude is emotion. Emotion is a complex subject in psychology that requires further analysis and a strong candidate in influencing the outcome of attitude toward mathematics in the student. Emotion has been identified as a strong factor in influencing the persuasion on an individual, and change in attitude towards a specific object, in this case, mathematics. Emotion and cognition are driven on a similar platform, with emotion overly dependent on cognition as the underlying propellant. In addition to that, there is the importance to identify important components of emotion that includes self-efficacy in mathematics, the accessibility of attitude by the instructors, and issues related to change in attitude toward mathematics particularly psychological issues.

In the proposed study, the effects of attitude and the susceptibility to change due to external factors and the influence of emotion as a cognitive process in resistance to change will undergo detailed inquiry in the proposed study. In addition to that, the proposed study will inquire into factors that influence students to make certain judgments toward mathematics and decisions to drop out of school by developing positive or negative attitudes toward mathematics. Research by Shestowsky's (1998) will provide the basis of the relationship between attitude change and emotion.

Having studied a number of sources and considered a number of definitions on attitude, attitude toward mathematics, and varied factors that influence attitude of the student toward mathematics as baseline factors to build an attitude scale to measure attitude toward mathematics, the proposed research goes a step further to examine available literature on Measuring attitude toward mathematics.

Pierce, Stacey and Arkansas (2005) researched and developed an attitude measuring scale to monitor student attitude toward mathematics referred to as the Mathematics and Technology Attitudes Scale (MTAS) designed for high school students at their middle secondary years. The scale constituted variables categorized into 5 distinct groups based on their relationship with learning mathematics with technology. The five elements constituted in the scale were subdivided into subscales to measure "mathematics confidence, confidence with technology, attitude to learning mathematics with technology and two aspects of engagement in learning mathematics" (Pierce, Stacey & Arkansas, 2005).

The rationale to build the scale followed a gap in knowledge identified in a number of scales previously developed to measure attitude toward mathematics and the changing trends in technology and the changing classroom environment where conducting the study is best suited. In addition, previous scales were time consuming to address a number of issues such as asking for responses based on the use of questionnaires. Most of the scales were identified to possess a further problem of failure to address the needs of children as young as the age of 14 with scholastic capabilities widely varying between them. Administration of previous scales consumed a significant amount of time. Typically, that was due to the number of items in the scale to evaluate attitude of the learner toward mathematics. Thus, there was need to factor issues including item development that focuses on current trends in education and well understood by the current cohort of students.

The study culminated with affect and behavioral engagement as critical factors to integrate into the scale. Contributions toward engagement literature were based on the studies done by Fredricks, Blumenfeld, and Paris (2004). However, Vale and Leder (2004) and Chapman (2003) contributed to the literature on affect. The behavioral context of the study included knowledge by Galbraith and Haines (1998) that had researched and discussed extensively on mathematic engagement.

The combined scale consisted of 27 items with five subscales. Among the critical factors constituting the scale were affective engagement and attitude toward mathematics, making attitude toward mathematics one of the sub factors to consider in developing the scale. Different response sets were used based on the item under investigation on a five-point scale. The scores varied between 5 and 1, with each score occupying a specific position on the scale.

A critical analysis of the scale indicated varied points. One of the key elements considered was factor analysis. Factor analysis provided the structural reliability of the scale along with inter-item correlations were each evaluated and showed the scale could be manipulated to accommodate sub-divisions of four items per factor. Additional factors were identified to make the administration of the scale much easier to the respondents while ensuring respondents could easily provide responses. Further factor analysis provided sufficient number of items to use in building the scale. Thus, the scale was flexibly made, and quick to administer.

Results from administering the scale provided information about the factors that contributed to student effectiveness in learning mathematics, differences in math performance form different schools, thus learning environments, and was the baseline for discriminating among the cohort of students participating in the study.

.2.5.6 Impact of the Scale on Math Attitude

Building an attitude scale to measure attitude toward mathematics is proposed to have a positive impact on the completion rates of students and their values and innate desire to take math classes at university. The scale is proposed to provide teachers and other stakeholders information to assist students develop positive attitude toward mathematics to increase high school completion rates while inculcating a positive belief in their abilities.

Teachers, stakeholders, and students are supposed to use the scale to change various beliefs toward mathematics to open up the desire by the student to continue solving mathematics problems at different academic levels of study, and open up opportunities for higher level of achievements. Thus, one of the processes of changing attitude toward mathematics is to establish a context that is emotionally safe for the student.

Another impact of the proposed scale is to draw on the theoretical propositions of changing attitude toward mathematics proposed by (DeBellis & Goldin, 1993). In their propositions, the researchers introduced the concept of meta-affect to transform the emotional experience of affect on the student, which negatively affect the attitude of the student toward mathematics. Affect introduces emotional dispositions such as fear, considered to occupy the negative position in the scale, while feelings associated with anxiety sometimes heighten the intensity of the student's concentration and disposition to solve a challenging problem. Thus, the meta-affect becomes one of the critical components to consider when evaluating the impact of the attitude scale in measuring attitude toward mathematics.

Typically, changing the feelings a student has toward mathematics, by making the student feel safe is one of the impacts the meta-affect could have in a student's attitude toward mathematics. The scale further allows teachers and stakeholders work concertedly toward making students enjoy mathematics while solving mathematics problems.

In addition to that, the quality of the student's future life, learning of mathematics and its application in the future is guaranteed, identification of various attitude toward mathematics, and motivation of leaners to study mathematics are other benefits and impact of the proposed scale for measuring attitude toward mathematics. In addition to that, it is pertinent to note that the attitude toward mathematics measuring scale is bound to provide teachers with behavioral characteristics of the student in studying mathematics, and the ability of the teacher to provide earlier intervention if the student's reading behavior is poor.

On the other hand, parents and teachers, based on research findings, tend to associate student's success in mathematics to the attitude a student develops toward mathematics, and the attitude the parent has toward mathematics. Thus, an attitude measuring scale tom measure attitude toward mathematics could emphasize in the parent the need to invest more interest in inculcating positive attitude in the student toward mathematics and could be instructive in the context of the study.

Teachers form the fundamental baseline for instructing students in their math courses, thus an attitude scale could equip teachers with the capability to prepare students psychologically to agree on various issues. These include agreeing that everyone makes mistakes. In addition to that, it enables teachers create math-testing environments that addresses specific needs of the leaner, allow math teachers to design positive experience with the leaners, and make the learning and solving of math problems relevant to student's future life.

The attitude scales could enable teachers provide students with a flexible environment to input valued evaluations in contributing toward their advancement in mathematics. The proposed scale could also provide educators the flexibility to start leaning mathematics and appreciate manipulation of formulas at an early age. In addition, the scale enables teachers to equip students with skills for quality thinking, originality in thinking, and development of self-esteem in leaning mathematics.

The scale is proposed to be an instrument allowing for math therapy in the leaners through positive intervention by the teacher. Typically, the therapy draws on the theoretical propositions of attitude and its link with the phycology of the student in terms of the cognition process. In addition, in the context of variables such as anxiety that affect attitude toward mathematics, the proposed paper provides leaners with new coping skills in solving mathematics problems, and minimize the adverse impact of attitude toward mathematics.

The need therefore to develop a multipronged approach based on theoretical propositions in the fields of educational theories including the theoretical view on motivation and cognition. In addition to that, the proposed study calls for teachers and researchers influencing positive attitude toward mathematics in the student to integrate motivation, cognition, and emotion. There is also need to integrate the concepts in searching for approaches to inculcate positive attitude toward mathematics in the student. On the other hand, teachers, based on the attitude scale, are compelled to consider and incorporate goals, knowledge, belief, cognition motivation on the student, and self-regulation.

Self-regulation, as one of the conceptualized outcomes in using an attitude measuring scale, is an intrinsic attribute in an individual regulating the generation of negative or positive thoughts towards and object, leading to the development of actions, and the cyclic tendency in an individual to pursue a matter until the attainment of a specific goal. One of the strong points considered here in self-regulation is the goal directed behavior impelled by self-regulations. Thus, the teacher is able to inculcate in the leaner the three variants of self-regulation to ensure optimal performance and commitment toward solving mathematics problems in class and out of class. The proposed paper will integrate rapid self-regulation as based on the rapid response of the student in solving mathematical problems presented.

Further studies have shown a strong relationship between attitude change toward mathematics and achievements. Yara (2009) makes significant contributions of attitude toward mathematics and achievements bases these on observations. Yara (2009) shows that positive attitude change toward mathematics related strongly achievement rates in mathematics and student belief in solving mathematics problems as discussed elsewhere in the paper. However, a gap in knowledge appears in the entire research process of establishing empirical evidence relating change in attitude toward mathematics and student achievements. Thus, the proposed study will focus on determining the relationship between successes rates, attitude change toward mathematics, and attitude scale to measure attitude toward mathematics in the student. In addition, the study will endeavor to establish how the proposed attitude toward math measuring scale will contribute to motivating students take math classes at university.

3.0 METHODOLOGY

To conduct the proposed study with an aim to build an attitude scale for measuring attitude toward mathematics, in the proposed that methodology adopted addresses the proposed research to answer the inquiry into building attitude. The study is proposed to determine the attitude measuring scale toward of the learners toward mathematics, and provide a measure of the impact of measuring attitude on a numerical scale to determine its impact on dropout rates and taking math classes at university.

The proposed research is in common agreement that a number of scales have been developed used to measure attitude toward mathematics. Thus, the proposed research will constitute identifying the knowledge gap existing in a number of currently available attitude measuring scales, discrepancies in expectations from using currently available scales, and specific areas of improvement. In addition to that, the proposed scale is intended to be flexible to use and incorporate a smaller number of items compared with scales identified in the literature review.

Another factor to consider is a scale that factors the age of the learners. The proposed study intends to build an attitude scale to measure attitude toward mathematics in leaners as young as fourteen years of age identified with varying scholastic capabilities.

Other factors to consider when building the proposed attitude measuring scale is to consider a scale that allows students to be asked questions which allows the respondents to reflect briefly before providing an answer. It is

proposed, the approach will serve the purpose of a questionnaire though the questionnaire will not be excluded from the study.

New items well understood by the student will be developed with available scales forming the benchmark for evaluating the new scale proposed to be developed. Galbraith and Haines (1998) developed a scale with tertiary students as their subjects, but found it difficult to transfer the items to other students at different study levels. Definitions of key concepts used in the study will form the baseline of the study. These include concepts such as attitude, motivation, cognition, and other variables proposed for use in the study. In addition to that, student behavior will constitute another key concept to consider in the study, age, context, and culture of the student background will play a critical role in the study.

The proposed methodology will be tripartite. The study will commence with an analysis of available and published literature on attitude, attitude toward mathematics, and critical analysis of literature on scales developed to measure the learner's attitude toward mathematics. In addition to that, the scale will draw in detail from available body of knowledge on the psychological factors that define and determine attitude toward an object and the behavioral characteristics of the object whose attitude intended for measurement.

Typically, the current study will factor the use of questionnaires validated to measure variables used to measure the confidence of a student in mathematics, motivation toward mathematics, and other variables identified in the literature review. Among the contributors toward the development and validation of a scale were Fogarty, Cretchley, Harman, Ellerton, and Konki (2001). In the scale developed by Fogarty, Cretchley, Harman, Ellerton, and Konki (2001), 37 items were identified and used with some items consisting of long statements likely to distort the meaning of the question a respondent is asked. Thus, the proposed research will heavily borrow and build on current literature, with much modifications based on identified discrepancies with the aim of the study, and other weaknesses and knowledge gaps identified in other scales. Other factors to consider in building an attitude measuring scale includes the flexibility of using the scale repeatedly in a diversity of classes, gender, and study levels particularly to university level. In addition, the methodology will focus on building a scale to enable teachers, parents, and stakeholders determine the relationship between an attitude measuring scale and reasons students fail to complete their high school course to graduation and failure to take math classes at university.

The proposed scale is required to provide students with the flexibility to complete administered questions quickly. Thus, the scale is proposed to consist of short, clear, and précises statements, avoidance of negatively worded statements will define the scale, and straightforward questions to avoid negative feelings and attitude in the mind of the respondent, in this case the student. Thus, the proposed scale intends to avoid seeding negative thinking in the student. On the other hand, the prevailing culture of the school data is collected will be given due consideration.

3.1 Item development

In developing items for the study, available literature will provide the basis for developing items used in the inquiry. In addition to that, while developing on available literature and currently available item development techniques, inquiries into factors that influence appropriate items development will constitute the study. The number of items incorporated in the study, definitions based on literature review will provide the basis for item development. In addition to that, items used will be assigned numerical values to distinguish the items from others.

Based on Vale and Leder (2004) views on attitude toward mathematics, numerical values will be assigned items related to confidence and self-efficacy of the student in developing items for use in the study.

In developing items for use in the study, definitions used in the literature review and analytical information will form the baseline for items used in the study. Typically, examples include confidence in mathematics. Confidence in mathematics and can be restricted to ability of the learner to score well in mathematics and the ability to provide the promise that they can handle difficulties experienced in mathematics. In addition to that, the meaning of the items used in the study will be critical in the study.

It is important in the study to identify and incorporate construct validities of the items used in the study. Thus, the construct validity should be well established when developing items for use in the proposed study (Shavelson, & Stanton, 1975).

3.2 Sample Methodology

A sample for the study will include students at lower levels of study, to university level. In addition, Patton (1990) will form an inspiration of sample development providing the direction and range of students the attitude measuring scale will be applied. That will further provide significant statistical information for statistical analysis and study (Sackett et al., 2000). Thus, the study is proposed to use purposive sampling technique based on the rationale that the technique has widely been used with impressive results in academic fields and to determine the behavior of educators in the education sector. In addition to that, observations show that purposive sampling provides control in restricted range in measurements to avoid false findings in correlation measurements (Goertz, Floden, & O'Day, 1995; Ravitz, Becker, & Wong, 2000; Tschannen-Moran et al., 2000).

The importance to find heterogeneous patterns and problems likely to be inherent in the study reinforces the use of purposive sampling technique as proposed argues that "maximize discovery of the heterogeneous patterns and problems that occur in the particular context under study" (Erlandson, Harris, Skipper & Allen, 1993). In addition to the latter argument, "convenience sampling is suited for these studies rather than probabilistic sampling because the aim is not to establish population estimates, but rather to use correlational analysis to examine relationships between items and measures" (Viswanathan, 1993), thus, justifying the use of purposive sampling in the context of the proposed study.

In selecting the items for study, best practices as proposed by Gorsuch (1983), will form the basis for their selections. According to Gorsuch (1983), sample sizes used in the context of the current study are selected based on guidelines with the factor analysis with specific ratios of the participant and subjects are factored (Gorsuch, 1983). Other issues to factor when selecting items and participating subjects include number of questionnaires to administer, motivation for subjects to return administered questionnaires, type of questions in the questionnaires to administer, and the effective sample size to reduce biasness are considered (Singh, Granville & Dika, 2002).

3.3 Building the Attitude toward Mathematics Scale

In building attitude-measuring scale to measure attitude toward mathematics, the aim of the study will be focused on analytically identified factors influencing development of a scale to measure attitude. In addition, the items incorporated into the study will be evaluated to determine if they adequately and plausibly reflect theoretical propositions and definitions of the attitude and attitude measuring scales with empirical dimension on attitude measurements. In addition to that, the attitude measuring scale will reflect conceptualized in the context of the current study to include among other variables motivation. In addition, feelings, belief, and other variables will constitute theoretical constructs incorporated into the study Galbraith, & Haines, 1998).

The draft questionnaires administered in the study will include the cognition concept as stated in the latter statement as one of the attributes of attitude. Cognition, in the questionnaire will comprise perceptions of difficulty in solving mathematics problems by the student, perceived usefulness of mathematics in the life of the student in everyday life and future life, behavioral control that determines the behavior of the student as one component in measuring attitude toward mathematics, and belief of the learner toward mathematics. In addition to that, the questionnaire will contain section for affect as theorized and analyzed in the literature review and other variables for building an attitude scale to measure attitude toward mathematics (Forgasz, 1995).

The researcher will build on current knowledge and formulate other variables based on the gap in knowledge identified by analyzing available literature on attitude measuring scales. Thus, the researcher will formulate items and will ask for the assistance of professionals in the academic discipline to make knowledge contributions in item analysis. In addition, proposed items will be subject to analysis by additional by the team of professional contributing in knowledge toward building the scale and thus, will be susceptible to removal addition based on their knowledge contributions toward the proposed study. Thus, the validity of the items will include face validity, clarity, and salient. In addition to that, the items will be checked for theoretical consistency and any redundancy removed from the items list.

Negative and positive items in the proposed scale as proposed and discussed in the literature review are proposed to be integrated into the scale to measure negative attitude toward mathematics and positive attitude toward mathematics. Thus, each of the items and wording will be intended for use to represent a specific dimension.

Data Collections

Data collection will be done online with a lot of confidentiality. The proposed questionnaire administered online to students to capture students responses will be programmed to allow for radio buttons response method. In the proposed radio button response method, the respondent will be required to select a single item per question

without any options for more than a single response. In addition to that, the scripts used online will be validated and each data sheet made user friendly for the users to encourage responses.

Data Analysis

Data analysis forms one of the underlying factors in determining the rationale for the attitude scale to measure the attitude of students toward mathematics. In addition to that, the analysis will constitute the items and their implications on the proposed scale.

A multidimensional scaling will be applied in analyzing data collected for the study. In addition to that, a linear relationship between the items used in the study will be examined before data entry is done. Data entry for data collected in the study will be done using SPSS software version 14.0, which is a Statistical Package for the Social Sciences. Meaning scores based on coded items will provide the baseline for using negatively worded items. Univariate distributions at the level of the items used will contribute in making identifying any errors inherent in the data in use. The number of items to retain, as stated above will be determined based on the proposed attitude scale, and criterions including that proposed by Cattell (1966) based on the correlation matrix, and the plot levels of the items.

4.0 CONCLUSION

In conclusion, the study to build an attitude measuring scale to measure attitude toward mathematics enables teachers and other stakeholders in the education discipline determine the connection between student attitude toward mathematics, dropping out of school, and taking math classes at university. To establish the rationale for the relationship the above relationship, the study will focus on establishing working definition of attitude, established methods of measuring attitude and the effects of attitude on the student, establish attitude construct validity, and attitude toward mathematics. In addition, the paper is proposed to provide the baseline for measuring attitude and the challenges experienced to provide empirical scales for measuring attitude that are scientifically founded. The research is proposed to go further and establish the measurements of attitude toward mathematics and associated variables to establish the rationale for building an attitude measuring scale to measure attitude toward mathematics and key factors influencing the measurement of attitude. An analysis preliminary of findings indicate attitude to be a psychological function with emotion as the driver constituting cognitive processes that influence the liking or disliking mathematics. That sums up attitude in emotion, cognition, and behavior. Other views project attitude as a social function based on expressions and utilitarianism that allowing external factors to manipulate the social function based as the force driving. In its multipronged definitions, attitude is also viewed as influencing positive or negative behavior in a student toward mathematics with the consequence of a low or high likelihood of the student failing to complete graduate at high school and others failing to take math classes at university. Other research literature links attitude to internalization and external stimuli to take some kind of action through repeated responses to the external stimuli, which leads to the summative view of attitude to constitute cognition, behavior, and affection. Attitude is therefore, viewed as a dynamically changing element with a susceptibility to change. Despite the conflicting definitions of attitude, attitude is a dynamic aspect in the human mind that is subject to change based on applied stimuli. Thus, reinforcing the fact that attitude is susceptible to manipulation from environmental and psychological factors toward an object, in this case, attitude toward mathematics. To manipulate attitude positively, there is need to scale attitude empirically to allow teachers and stakeholders monitor the behavioral trend of the learner toward mathematics and determine attitude interventions for learners from different backgrounds. Thus, use of empirical measures to measure attitude toward mathematics of the student renders one to determine the success rates or unsuccessful rates of a student in math performance. That particularly focuses enjoyment and dislike of math with repeated failures in math performance as a strong indicator leading to the development of negative attitude and belief that one is not good in mathematics. The resulting attitude leads the student to view math as a useful or useless subject. The belief developed due to the attitude in math leads students to develop a strongly embedded belief of one's inability to solve mathematical problems and consent defeat. Accepting defeat leads to an entrenched negative attitude toward mathematics. A number of scales mentioned show some variations in the number of items used, but there is need to use a number of items that learners can easily provide responses to when administered, there is also need to intensively search literature on social psychology and the factors influence attitude toward mathematics. There is also need to study a variety of techniques suiting learners at different that teachers and other stakeholders might find valuable tools to manipulate attitude toward mathematics in the learners to instill positive behavioral change in the learners to continue with math to higher academic levels of study.

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ELECTRONIC EVALUATION: FACTS, CHALLENGES AND EXPECTATIONS

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ABSTRACT

Due to its fundamental role in the teaching and learning process, the concept of evaluation has been widely tackled in academic spheres. As a matter of fact, evaluation can help us discriminate between good and bad courses and thus establishes a solid background for setting success to major courses' aims and outcomes. Whether in electronic or paper form and whether as a continuous or periodic process, evaluation helps teachers to form judgement values and students' development and achievements. With regard to electronic evaluation, more and more university Algerian teachers are performing it though with a low degree through the online Master and Doctorate theses works' supervision, for instance .The current study aims at investigating the teachers' attitude to the use of electronic evaluation as a means to evaluate students' performance and progress. The other aim is also to shed light on other aspects of electronic evaluation which are still under limited experimental process and needs to be upgraded in the university departments' database. This might include mainly the electronic course evaluation system and course work assignment electronic submission. Results which were collected through an online survey submitted in the form of Likert scale questionnaire to 16 teachers randomly selected across different Algerian universities revealed interesting findings. Most teachers agreed that electronic evaluation system can replace paper evaluation system forms since it saves much of the teacher's time and energy. Most importantly, all teachers admitted that the electronic course evaluation system would help them to provide quality courses.

Keywords: electronic evaluation course submission supervision assignment

1 Introduction

Whether through a planned or an undeliberate way, electronic or online evaluation is stepping little by little in the different Algerian universities' administrative planning and academic acts. The aim behind adopting such a new evaluation system has been to replace the traditional paper form in the faculty members and departments. The electronic system has already been launched and developed in worldwide top universities and is currently used for providing quality courses. The current paper aims at shedding light on the potential and challenges that the implementation of the online evaluation system in the Algerian universities institutions' academic and administrative spheres may encounter. The study relied on the views and attitudes of a sample of 16 teachers who are currently in charge of different courses in the different Algerian university faculties and departments. It is obvious that such a focus on the teachers' views as the main source of the study data was due to their close awareness of their current teaching methodology, class environment, course organization and student satisfaction with their courses in general. Since the online supervision of the students' Master dissertation has already gained ground in the online evaluation system, the study aims also to raise the teachers' attention to the importance of the other possible online kinds of assessment such as the electronic course evaluation system and course work assignment electronic submission.

2 The Electronic Evaluation System: Scope and Importance

The electronic evaluation system has been adopted as useful method of assessment for e-teaching and learning in a growing number of the world universities. According to Feng et al.,(2013), the teacher evaluation has obtained a new dimension through technology as it can offer the teacher unique opportunity to have a reflections on video data. One important aspect behind the implementation of the electronic evaluation is its enhancement to the teacher self-evaluation. Haung (2010) admits that self –evaluation is likely to promote the professional growth which is necessary in school plan. Indeed, teacher achievement is boosted by the powerful mechanism of self-evaluation (Ross & Bruce, 2007).One other important benefit of electronic evaluation is that it also encourages student to participate in the course assessment and provide objective feedback that would help the teachers to improve their teaching performances and , thus , provide quality courses. Compared to standard evaluation forms (paper evaluation form), electronic course assessment gives students assurance that their responses are unidentifiable. Students can certainly answer anonymously in the traditional classroom education through the utilization of questionnaires; yet this process has several drawbacks such as the presence of errors and the time and effort spent on the data processing (Galanis et al.,2009).

3 The Electronic Evaluation System: Advantages and Challenges

The aim of any kind of assessment is to provide a direct immediate feedback that would enhance the measurement of both of the teacher or the learner outcomes. Beside providing immediate feedback, electronic evaluation can allow learners in particular to assess their teachers' courses objectively as their feedback is fully

anonymous. Alruwais et al.,(2018) listed other advantages of using electronic assessment. Students prefer Electronic evaluation because it is fast and easy to use. Most importantly, *“E-assessment provides immediate feedback compared with paper test , which helps improve the learning level.”*One other advantage for electronic assessment as stated by Alruwais et al.,(ibid.) is that students in remote areas can learn and assess in their locations with flexibility and ease .With regard the to the teacher, through e-assessment ,he or she can improve the quality of the students’ feedback quality and track the students’ performance and identify students’ misconceptions before the exam. E-evaluation is also useful with large class and can reduce the teachers’ burden in the assessment of the students’ exam papers.

However, there still some challenges that institutions need to overcome for an effective use of the electronic evaluation system. Different studies were carried out and suggested solutions to the expected challenges:

Way (2012) stated that students need to be trained on the computer online use and to familiarise more with the e-assessment. In parallel to the students’ training, they should be equipped with sophisticated labs with internet access. Thus, in a country like Algeria, the poor technical infrastructure especially in some universities may hinder the full setting up of the electronic evaluation system. The fact that electronic evaluation system is set out to provide questions of close response may also represent a difficulty in scoring and correcting questions with student open response (Alruwais et al.,bid.).Indeed, the computer is set out to correct individual students’ direct response and not to assess group project which requires the assessment of each member.Furthermore, the monitoring of the communication skill and providing feedback to each member individually is a hard task for the computer to process. Finally, many of ‘old generation’ Algerian teachers are not familiar to the use of computer and with ICT’s in general, thus, *“teachers need a training to be confident for using E-assessment system.”* (Ridgway et al.,2004).

4 Data Collection Method and Analysis

The study aimed at investigating the views of a group of Algerian teachers to the potential and challenges of the electronic evaluation system in the Algerian universities. An online survey which entailed a Likert scale questionnaire (ranked from strongly agree to strongly disagree) addressed to 16 university Algerian teachers (most of them are from Chled university while the other teachers are from nearby universities).The questions were grouped under three main categories :The importance of Electronic evaluation , the teacher-student agreement on electronic evaluation and the potential of the electronic evaluation system in the Algerian universities. The summary of the survey findings are shown in Figure 1,2 and 3 below.

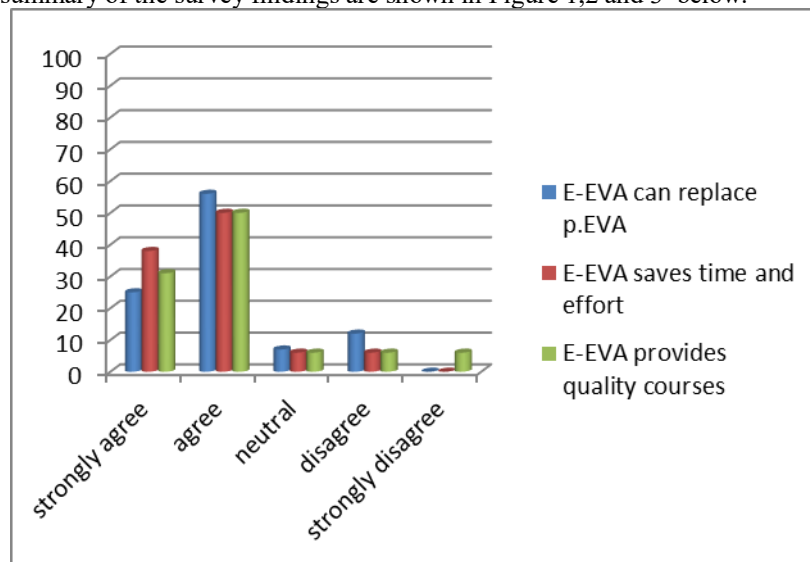


Figure 1 : The Importance of E-evaluation

Nearly all questioned teachers seem to be aware of the important results that the launching of the electronic evaluation system would have on the quality of their courses which are expected to progressively match their students’ expectations. Furthermore, all teachers admit that the electronic evaluation system can surely save their time and effort they often spend in correcting their students’ assignment and exam paper forms especially for those in charge with lectures where the number of students is usually large. In brief, the results as shown in Fig.1 confirm the positive expectations of the researcher with regard to the positive teachers’ attitude to the possible implementation and adoption of the E-evaluation system in Algerian universities and institutions . Yet, such teachers’ high spirit vis a vis the E-evaluation system is objected by their limited ability (at least for an

important number of them) to monitor the computer use and the ICTs in general beside other factors that may challenge the exclusion of the use of paper evaluation forms definitively.

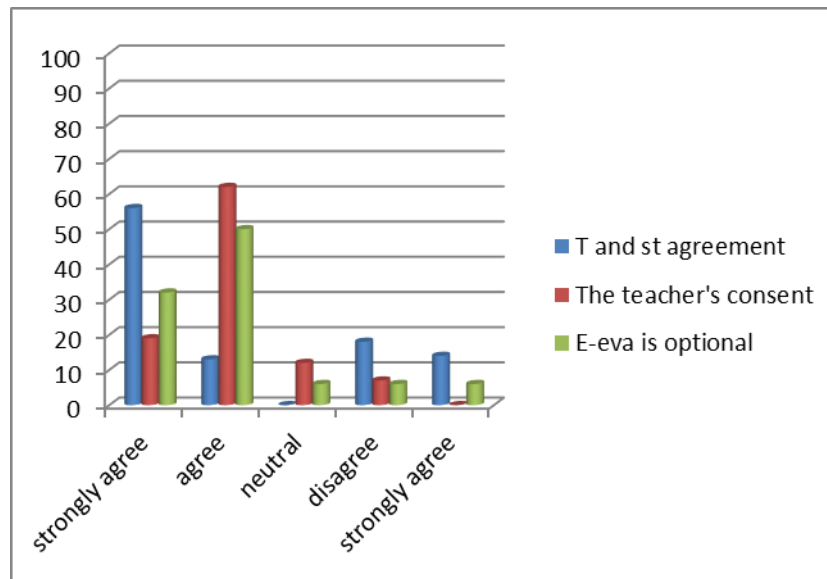


Figure 2: Teacher-student Agreement on Electronic Evaluation

The aim of the questions as depicted through the teachers' responses in Fig. 2 was to investigate to what extent is both of the teacher and students' consent on the use option of the E-evaluation system important. Thus and as expected almost all teachers under investigation believe that before university launches the electronic evaluation system, it is necessary to take the teachers' degree of willingness and readiness to use such a system into consideration. Indeed, the teacher is the core element in any university evaluation process including the electronic assessment system since it involves factors that set out his or her course success such as teaching methodology, class environment, course organization and student satisfaction with a course in general.

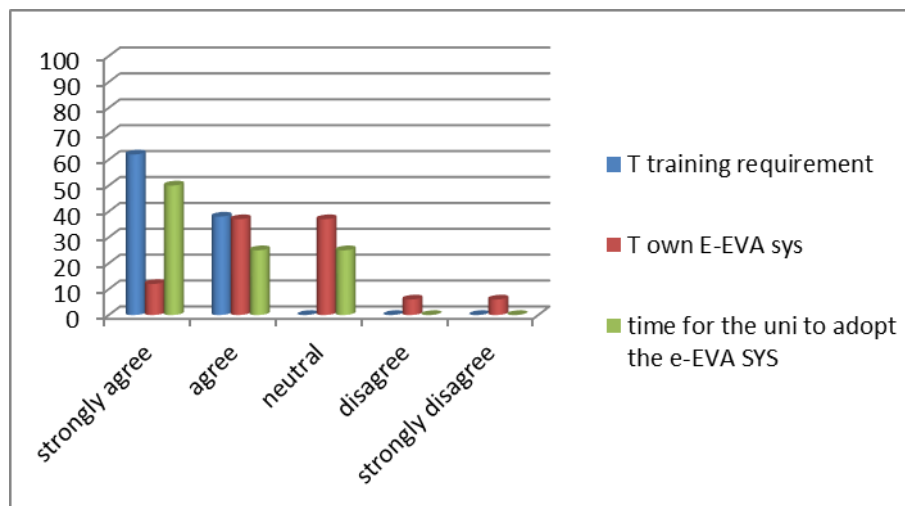


Figure 3: E- Evaluation System University Implementation Potential

The last range of questions as depicted in the findings of Fig. 3 aimed at identifying to what extent is the Algerian university staff and administration ready to adopt and launch the Electronic evaluation system. Though most teachers admitted that they still need more training on the Internet and Technology use, they confess that it is time for the university to adopt such a new form of evaluation system for it will contribute to the development and improvement of the Algerian university. As an initiative, some teachers even accepted the idea that they can devise their own 'small scale' electronic evaluation frame before their universities takes the decision to officially launch and develop such a system.

It is clear that teachers in current study hold a positive attitude towards the use of the electronic evaluation system and its final implementation by their faculties and departments. In fact ,the teachers' enthusiasm stems

out from the advantages that the adoption of such a system can offer to them such as providing an objective students' direct feedback to their courses, reducing their time and effort made to correct the student exam papers and improving their courses' quality.

5 Conclusion

This paper points to the challenges and the potential of the electronic evaluation system implementation in the Algerian universities. The paper relied on the views of university teachers who expressed their enthusiasm to the positive impact that adoption of such system would have on the quality of their course in particular and on the improvement of the Algerian university in general. Yet, such teachers' inclination and readiness to the use of electronic evaluation system is faced by a poor university technical infrastructure in terms of the lack of sophisticated labs and appropriate teaching learning IT centres without which the implementation of any new innovative technological system such as the e-assessment system is unachievable. One of the current study limitations is that it did not include the students and administrators' attitudes and views to the use of the electronic evaluation system. Hence, the study may serve a milestone in the way for further research that would help to cover the study issue of electronic assessment from different perspectives to set up an appropriate foundation for the launching of the electronic evaluation system in the Algerian universities different administrative and academic spheres.

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ENHANCING QUALITY OF LEARNING THROUGH COOPERATIVE MODEL IN EAST JAVA

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ABSTRACT

One of the goals of cooperative learning is to improve student performance in academic tasks and improve student learning outcomes. This research uses action research method with the respondents of vocational students. Student activity during the Numbered Heads Together cooperative learning as a whole progresses better, as well as the teacher-run teaching activities are significantly improved. Thus learning mastery can be achieved by applying cooperative learning model type Numbered Heads Together. Student response in this cooperative learning is positive, students enjoy the learning process and motivated to do the collaboration during the learning takes place.

Keywords: Cooperative learning, Numbered Heads Together.

Introduction

In achieving success in the learning process in accordance with the curriculum, the performance of teachers and students is required to manage their creativity by linking real situations to the classroom, but often students get bored with the same learning model every day. In learning activities not only teachers who play a full role but on the contrary, teachers still play an important role in teaching and learning process because without teachers will not succeed (Sonam Mehta & A.K.Kulshrestha, 2014). The role of teachers in the learning process of teachers as a facilitator, teachers as managers, and teachers as evaluators in learning (Park & Nuntrakune, 2013). This effective role encourages teachers to consider what methods are used in delivering the subject matter. Various learning methods ranging from lectures, demonstrations, and cooperative learning one of them can used teachers in delivering the material, but in this study chose cooperative learning because cooperative learning involves more students in the learning process (Gillies, 2014).

Menurut Sulisworo & Suryani (2014) Cooperative learning model is a learning model that requires students to work together in small groups to accomplish joint tasks and are interdependent with one another to achieve mutual respect. Teaching and learning activities in the subjects of Accounting from all students are still below the standard score of learning and teaching mastery. The completeness of student learning result is mostly because students are often bored and happy times with activities done outside the classroom, therefore with research that will be done is expected to reduce boredom. Based on the example it seems clear that the bored state in the existing students showed a decrease in motivation to learn to students, causing less maximal in absorbing the subject matter taught and ultimately lead to decreased student achievement in students (Leasa Marleny & Corebima, 2017). From the above problems can be seen the selection of learning methods that are less precise with the existing conditions can cause various problems and can also inhibit the success of a learning process for both students and for teachers, so that learning model is needed that can increase student interest, activity, and learning outcomes and the most important is the result students can achieve the established standard of mastery and able to create an effective co-operation in learning (Kupczynski, Mundy, Goswami, & Meling, 2012). Based on the theory of cognitive learning, one of the learning models that can increase student's interest, activity, and learning outcomes is by cooperative learning model. One of the objectives of cooperative learning is to improve students' performance in academic tasks and to improve student judgment on academic learning related to learning outcomes.

Theoretical Framework

Understanding Teaching and Learning Process

According to Djamarah & Zain (2006), the process of teaching and learning is a change of behavior, whether involving knowledge, skills or attitudes, even covering all aspects of the organism or personal. Teaching and learning activities such as organizing learning experiences, cultivating teaching and learning activities, assessing the process, and learning outcomes are all within the scope of teacher responsibilities (Sudjana, 2013). From the above understanding it can be concluded the core of the teaching and learning process includes activities

undertaken by teachers ranging from planning, implementation, to evaluation activities. The role of teachers in teaching and learning process, among others: As a facilitator, Provide conditions required for students to learn, as a mentor Provide guidance to students to be able to learn smoothly and effectively. As a motivator Provide encouragement to students willing and keen to learn. As an organizer organizing the process of teaching and learning in the classroom. As a resource can provide information required by the students.

Basic Principles and Characteristics of Co-operative Learning

The basic principle of cooperative learning: Each member of the group (student) is responsible for everything that is done in the group and work together (Kupczynski et al., 2012). Each member of the group (student) must know that all group members have the same goals. Each member of the group (student) must share the same duties and responsibilities among his group members (Genc, 2016). Each member of the group (students) will be subject to evaluation. Each member of the group (student) shares leadership and requires skills to learn together during the learning process. Each member of the group (students) will be required to individually account for the materials handled in the cooperative group. According to Gillies (2016) states the characteristics of cooperative learning compared with group work are: Positive Interdependence, reciprocal relationship based on the same interests or feelings among group members where success is someone else's success as well or vice versa. To create such an atmosphere, teachers need to design group structures and tasks that allow each student to learn, evaluate himself / herself and his or her peers in the mastery and ability to understand the subject matter. Conditions like this allow each student to have a positive dependence on the other group members in learning and completing the tasks that are his responsibility that encourages each group member to work together (Yoshida, Tani, Uchida, Masui, & Nakayama, 2014). Interaction Face to Face, the interaction that occurs directly between students without any intermediaries. In the absence of protrusions of individual strengths, there is only a pattern of verbal interactions and changes among students enhanced by the existence of mutual reciprocity that is positive so that it can affect educational outcomes and teaching (Maman & Rajab, 2016). There is personal responsibility regarding the subject matter in group members. So students are motivated to help their friends, because the goal in cooperative learning is to make each member of his group become stronger personality. The most important goal that is expected to be achieved in cooperative learning is that students learn these cooperative and related skills are important and indispensable skills in the community. The students know the level of success and effectiveness of the cooperation that has been done (Kupczynski et al., 2012).

According to Duxbury & Tsai (2010) states the important goals that can be achieved with cooperative learning is in cooperative learning despite covering a wide range of social goals, as well as improving student achievement or other important academic tasks. Some experts argue that this model excels in helping students understand difficult concepts. The developers of this model have shown that cooperative reward structure models have been able to increase students' grades on academic learning and norms change related to cooperative learning outcomes can benefit both lower and upper group students working together to complete academic tasks (Sonam Mehta & A.K.Kulshrestha, 2014). Acceptance of individual differences, another goal of cooperative learning model is the widespread acceptance of different people based on race, culture, social class, abilities, and disability. Cooperative learning provides opportunities for students from different backgrounds and conditions to work interdependent on academic tasks and through a cooperative reward structure will learn to respect each other. Development of social skills, the third important objective of cooperative learning is to teach students the skills of collaboration and collaboration (Sonam Mehta & A.K.Kulshrestha, 2014). Social skills, important to the students because today many young people are still lacking in social skills. In the above objectives are expected to appreciate the opinions of others and mutually correct mistakes together, looking for the right answer and good, by looking for sources of information from anywhere just like a book package, books in libraries and other supporting books, to be assistants in searching for good and correct answers and gain knowledge, subject matter taught increasingly wider and better. According to Gillies (2016) states that the assessment and evaluation procedures are based largely on the assumption that teachers are using a competitive or individualistic reward system because cooperative learning models work under a cooperative reward structure and since many lessons in cooperative learning aim to achieve complex cognitive and social learning, different assessments and evaluations. In cooperative learning requires different testing procedures of the structure of one model built on cooperative learning. In teacher scoring should be consistent with the concept of a cooperative reward structure it is important for the teacher to appreciate the outcome of the group both the end result and the cooperative behavior that produces the end result. The last unique and important assessment and evaluation for cooperative learning is the recognition of student learning outcomes and outcomes, for example the teacher announces team results and individual learning in the classroom after learning. Determination of team score scores include: step 1 determining team score, team score is calculated by increasing the score of each individual member of the team and dividing by the number of team members. Step 2 on the team's achievement,

each team receives a special certificate based on a good point system ($15 \leq$ average increase in group value <20), Great ($20 \leq$ average increase in group value <25), and Super (average group increase value ≥ 25).

Understanding Numbered Heads Together

Many ways we can do to improve the quality of learning. One of them is using the right model in Teaching and Learning Process. Of course the model we use tends to lead to Creative Learning Model. There are several Creative Learning Models. One of them is the Number Head Together (NHT) (Leasa Marleny & Corebima, 2017). Learning model is quite often used by educators in conducting Classroom Action Research. According to Maman & Rajab, (2016). Number Head Together (NHT) is an approach that involves more students in the material covered in a lesson and checks their understanding of the content of the lesson. Instead of asking questions to the whole class, the teacher uses a four-stage structure of numbering, asking questions, sharing and responding. From the above description can be concluded that Numbered Heads Together (NHT) is a method of learning where each student is given a number later created a group then randomly assigned the teacher to call the number from the students. This learning model usually begins by dividing the class into several groups. Each student in the group was deliberately numbered to facilitate group work performance, change group positions, compile material, present, and get feedback from other groups (Maman & Rajab, 2016). Numbered Heads Together (NHT) is basically a group discussion variance in which the trademark characteristic is that the teacher only designates a student representing his group, without telling who will represent the group first. This guarantees the total involvement of all students. It is also an excellent effort to improve individual responsibility in group discussions. Numbered Heads Together (NHT) has several advantages: each student becomes ready for all, can conduct the discussion earnestly, the clever student can teach the less intelligent students, the values of cooperation between students more tested, motivated student creativity and insight students develop, because they have to seek information from various sources (Leasa Marleny & Corebima, 2017). Numbered Heads Together (NHT) also has several disadvantages, namely: the possibility of the number being called, recalled by the teacher; not all group members are called by the teacher. While on technical constraints, for example the seating problem is sometimes difficult or less support organized group activities, especially for classes with the number of students over 35.

Understanding learning outcomes

Everything from what we do is certainly to achieve an outcome, as well as learning. After carrying out a learning activity is expected someone can get a result from the activity for example from not knowing to know, from not understand so understand, and from not knowledgeable become knowledgeable. There are several definitions of learning outcomes expressed by experts among others. Learning outcomes are patterns of actions, values, understandings, attitudes, appreciations and skills (Suprijono, 2013). According to (Sudjana (2013), According to the results of learning is the result obtained by students from the teaching and learning process that appears in the form of behavior as a whole that consists of cognitive, affective and psychomotor elements in an integrated student self. From the above description of opinion can be concluded that the learning outcome is an internal capability possessed by a person or individual and allow someone to do something or show performance. According to the results of learning is the result obtained by students from the teaching and learning process that appears in the form of behavior as a whole that consists of cognitive, affective and psychomotor elements in an integrated student self. From the above description of opinion can be concluded that the learning outcome is an internal capability possessed by a person or individual and allow someone to do something or show performance certain. In learning behavioral changes that must be achieved by the learner after carrying out learning activities formulated in the objectives of learning. In the process of learning, learning outcomes are important because it can be a guide to know how far the success of students in learning activities that have been done. Learning outcomes can be known through evaluation to assess and assess whether students have mastered the knowledge learned on teacher guidance in accordance with the objectives formulated. Learning outcomes are influenced by various factors, either factors that come from within the individual or internal factors as well as factors that come from outside the individual or external factors (Sudjana, 2013). Internal factors include physiological factors and psychological factors. Which is a psychological factor of intelligence, achievement motivation and cognitive abilities. Based on the three domains used in the national education system mentioned above, it can be described whether the application of cooperative learning model type Numbered Heads Together (NHT) has been able to meet the three domains in achieving learning outcomes that have been established in the national education system. From the explanation in the previous discussion, the domain of Cognitive with respect to the intellectual learning outcomes of knowledge or memory of students in the learning process. In the application of cooperative learning model type Numbered Heads Together (NHT) obtained good learning outcomes, where students can gain knowledge not only from the teacher explanation but when students form several small groups in the thinking step together with members of the group seen that students can provide knowledge owned by exchanging opinions and discussing with members of his group.

Methodology

This type of research uses Action Research with quantitative descriptive method. Classroom Action Research is action research conducted with the aim of improving the quality of classroom learning practices (Kemmis & Taggart, 1982).

Subjects and Object Research

Teacher Field of Study, is the subject of research as an observer in research. In addition, the research subjects are also vocational students in Surabaya. Class determination was taken using purposive sampling technique by assigning a vocational class of 40 students. The object of this research is the application of cooperative learning model type Numbered Heads Together.

Data Sources

Primary data is intended as data about the use of cooperative learning model type Numbered Heads Together obtained from the learning activities undertaken by teachers and students, student responses in schools through questionnaires and student learning outcomes obtained from the value of formative tests and the value of student tasks. Secondary data is intended as data obtained from school profiles, daily test scores or reports on student learning outcomes in the form of report cards provided by the school.

Research design

The research design used is in accordance with the Class Action Research design. In this study involved teachers, students, and observers. In this study the researcher also acts as a teacher in the class that will be studied in the study of Accounting. Action Research is implemented because it is able to offer new approaches and procedures that promise more immediate impact in the form of improvement and improvement of teacher professionalism in managing the teaching and learning process in the classroom. Implementation of data collection in this study was conducted in three cycles and each cycle in this study followed the flow of action research design. The research design used is in accordance with the Class Action Research design. In this study involved teachers, students, and observers. In this study the researcher also acts as a teacher in the class that will be studied in the study of Accounting. Action Research is implemented because it is able to offer new approaches and procedures that promise more immediate impact in the form of improvement and improvement of teacher professionalism in managing the teaching and learning process in the classroom. Implementation of data collection in this study was conducted in three cycles and each cycle in this study followed the flow of action research design.

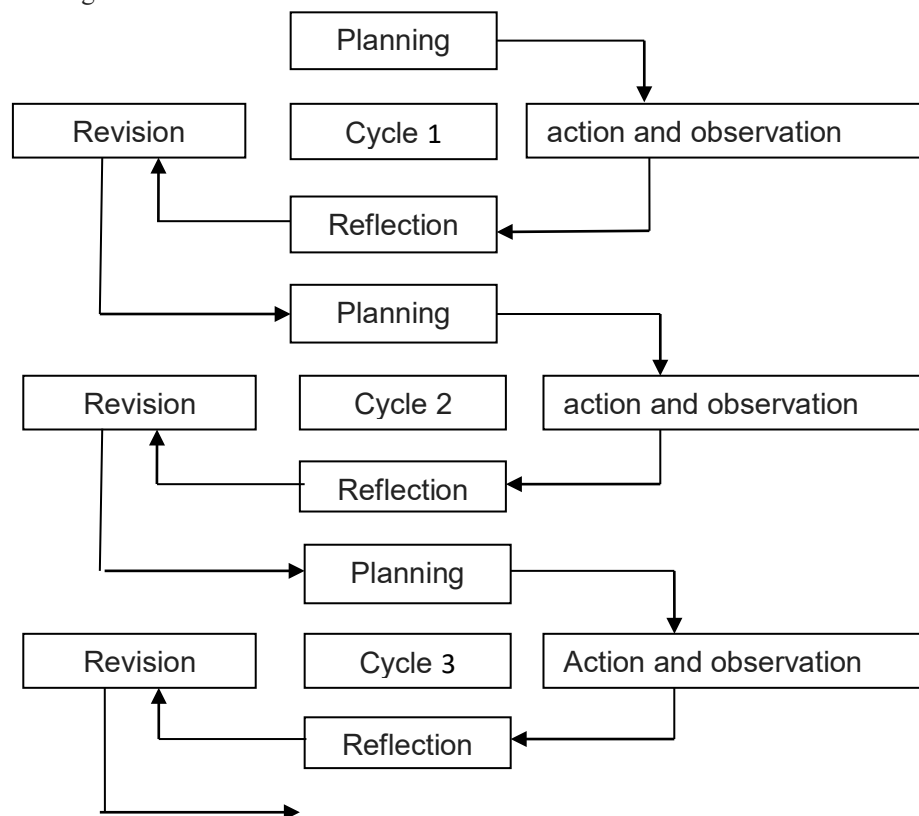


Figure 1: Classroom Action Research Flow

Based on the research flow, this research is carried out with several stages: Phase 1 planning (Plan), in this stage before conducting research, the researcher formulate the problem, purpose, and make the plan. Stage 2 action and observation (Action and Observation), at this stage what action the researcher will do as a change effort made and observe the results or impact of actions that have been done by researchers to students. Stage 3 reflection (Reflection), at this stage the researcher examines, view and consider the results or impact of the action to be performed. Stage 4 revision (Revised), at this stage based on the results of reflection, the researchers made a design revision to be implemented in the next cycle. Likewise, the design on the application of cooperative learning model type Numbered Heads Together done in three cycles.

Research Instruments

In this study the instruments used include learning instruments in the form of Syllabus, Learning Implementation Plan (RPP), Student Book, and evaluation questions / test sheets. The research instruments are: observation sheet consisting of cooperative learning type of Numbered Heads Together. Questionnaires to measure student responses Researchers used a Guttman-scale questionnaire that was made in multiple choice and could also be made in a checklist. Respondents' answers can be the highest score is worth (1) and the lowest score (0). Research using Guttman scale if you want to get a clear or firm answer and consistent to a problem that is asked. Data collection techniques used in this study is by observation methods, documents, questionnaires, and interviews.

Data analysis technique

After doing a series of data, the next step is to do data analysis. Data analysis is intended to determine the results of a series of research activities that have been done. The method used in this research is Quantitative Descriptive method. Descriptive research is used to describe the activities of teachers, students and the responses or opinions of students in learning. While quantitative data is data in the form of numbers obtained from the value of student pre-test and post-test. Observation of teacher activity is done in accordance with the management of teachers in applying cooperative learning model type Numbered Heads Together, while the student activity is done when the learning process takes place. To analyze the results of the assessment given by observers on the ability of teachers in managing cooperative learning and student activities during teaching and learning activities used an assessment with Likert scale 1-5 (Riduwan, 2009).

Table 1 : Criteria Limitations of Management of Learning

score	Explanation
1	Very Poor
2	Below Average
3	Above Average
4	Excellent

Table 2 : Criteria score assessment of the Learning

Score	Explanation
1,00 – 1,50	Very Poor
1,60 – 2,50	Below Average
2,60 – 3,50	Above Average
3,60 – 4,00	Excellent

Findings

Application of Cooperative Learning Model Numbered Heads Together

The third important objective of cooperative learning is to teach students the skills of collaboration and collaboration. Social skills, important to the students because today many young people are still lacking in social skills. In the above objectives are expected to appreciate the opinions of others and mutually correct mistakes together, looking for the right answer and good, by looking for sources of information from anywhere just like a book package, books in the library and other supporting books, to be assistants in searching for good and correct answers and gain knowledge, subject matter taught increasingly wider and better. Analysis of learning result data from applying cooperative learning model is as follows:

Table 3 : Student learning outcomes

Respondents	Grades	criteria	value	criteria	Grades	criteria
1	80	P	50	NP	80	P
2	60	NP	80	P	80	P
3	60	NP	70	P	90	P
4	80	P	60	NP	100	P
5	60	NP	80	P	90	P
6	70	P	90	P	90	P
7	60	NP	90	P	90	P
8	50	NP	60	NP	90	P
9	70	P	60	NP	80	P
10	90	P	90	P	80	P
11	80	P	90	P	80	P
12	90	P	50	NP	60	NP
13	60	NP	70	P	90	P
14	90	P	90	P	100	P
15	90	P	80	P	60	NP
16	80	P	90	P	100	P
17	80	P	80	P	90	P
18	90	P	90	P	90	P
19	60	NP	80	P	60	NP
20	90	P	90	P	70	P
21	90	P	90	P	90	P
22	90	P	70	P	100	P
23	80	P	80	P	90	P
24	80	P	90	P	100	P
25	60	NP	90	P	90	P
26	70	P	90	P	90	P
27	80	P	90	P	90	P
28	80	P	90	P	90	P
29	80	P	60	NP	100	P
30	80	P	60	NP	90	P
31	90	P	60	NP	50	NP
32	60	NP	90	P	90	P
33	80	P	80	P	70	P
34	60	NP	90	P	90	P
35	60	NP	80	P	90	P
36	60	NP	90	P	90	P
37	90	P	60	NP	90	P
38	60	NP	90	P	90	P
39	60	NP	90	P	90	P
40	90	P	90	P	100	P
mastery learning of The classroom		65%		78%		90%

- P : Passing an exam
- NP : Not Passing an exam

Based on the above table, it can be summarized data mastery learning students are presented as follows:

Table 4 : Degree of learning

cycle	\sum students	\sum Students P	\sum Students NP	mastery learning of The classroom
1	40	26	14	65%
2	40	31	9	78%
3	40	36	4	90%

In cycle 1, the test results are known that classical mastery in the class reaches 65%. Based on the provisions of the value of classical minimally is 70%, so that in this cycle 1 for classical completeness has not been achieved according to school requirements. In cycle 2, the test results are known that classical mastery in the class reaches 78%. Based on the provisions of minimal classical thoroughness then, classical completeness has been achieved in accordance with the provisions of the school. In cycle 3, the test results are known to reach 90%, then the classical completeness is also achieved according to school requirements.

Table 5 : Student Activity in Co-operative Learning Activities Type Numbered Heads Together

No.	Aspects observed	the results of the observation								
		Cycle 1			Cycle 2			Cycle 3		
		O1	O2	\bar{X}	O1	O2	\bar{X}	O1	O2	\bar{X}
1	Move quickly to where his group is	2	3	2,5	2	3	2,5	3	3	3
2	Listen / pay attention to teacher or friend explanations	2	2	2	3	4	3,5	3	4	3,5
3	Reading and writing are relevant to teaching and learning activities	3	2	2,5	2	3	2,5	4	3	3,5
4	Working / discussing the teacher's questions on the questions asked	2	2	2	4	3	3,5	3	4	3,5
5	Delivering opinions	2	3	2,5	2	3	2,5	3	4	3,5
6	Ask students or teachers	2	3	2,5	3	3	3	4	3	3,5
7	Answering questions	2	3	2,5	3	3	3	3	4	3,5
8	Summarize the subject matter	2	2	2	4	3	3,5	4	3	3,5
\sum		17	20	2,3	23	26	3	26	30	3,4
\bar{X}		2.3			3			3.4		
Category		Below Average			Above Average			Above Average		

*O:Observer

Based on the above table, according to the observer activity of learning management by teacher has increased during three cycles, the management of cooperative learning model type Numbered Heads Together in cycle 1 reaching average 2.3 with good predicate. In cycle 2 the learning management reaches an average of 3 with good predicate. In cycle 3 the learning management reaches an average of 3.4 with good predicate. Providing questionnaires of student responses to learning activities by using cooperative learning type Numbered Heads Together. Student response is said to be positive if the percentage of the number of students who have an opinion with the category of happy and agree more than 80%. Based on the questionnaire results can be known how far the student response to the implementation of the implementation of cooperative learning model type Numbered Heads Together as follows:

Table 6 : Student Response to Learning Model Cooperative

No	Description	Satisfied	Unsatisfied
1	How do you feel during this learning activity?	95%	5%
2	What do you think during this learning activity?	95%	5%
3	How do you think of: a. Subject matter b. Evaluation / quiz c. Learning atmosphere in class d. How to present the material by the teacher	90% 90% 90% 90%	10% 10% 10% 10%
		Satisfied	Unsatisfied
4	What do you think if the subject then uses this kind of learning?	80%	20%
5	What do you think if other subject matter is taught using NHT type cooperative learning model?	80%	20%

Student response analysis is distinguished based on three levels namely the level of pleasure and level of agreement at the level of pleasure almost all students express happy to follow lessons, subject matter, the atmosphere of the class until the way of presentation of the material by the teacher. At the novelty level some students also stated newly especially on how the presentation of the material by the teacher. Then for the level of agreement most students agree but nevertheless for the disagreement of applying the model to the Numbered Heads Together the same lessons as the others can be seen the percentage tends to be bigger than the displeasure and the unfavorable. Disagreements expressed by students in broad outline according to them that the cooperative learning type Numbered Heads Together there are friends who are not directly involved in the discussion. Then when applied to other learning they disagree because if all the lessons using the cooperative learning model type Numbered Heads Together takes a long time and the students become bored when executed on each subject.

Discussion

The Application of Cooperative Learning Model

Planning stage is done before implementing teaching and learning process. Several things are planned in the learning process, including preparing the material that will be taught in the first cycle, namely: Trading Company and Cost of Goods Sold, and preparing syllabus research instruments, Learning Implementation Plan (RPP), pretest and posttest sheets, teacher activity in the management of cooperative learning model, and student activity sheet. Stage of action and observation, on learning activities begins by conveying the title of the subject of "Trading Company and Cost of Goods Sold", with time provided 2 x 45 minutes. The teacher explains the learning objectives to be achieved at the end of the lesson and motivates the student by linking the initial knowledge such as providing questions about the knowledge of the trading company on the cycle. In the core activities the teacher starts learning by explaining the material about the Trading Company and Cost of Goods Sold, the students pay attention to the explanation given by the teacher, then the teacher gives the opportunity to the students to ask questions. The teacher then divides the students into seven groups, each consisting of 5-6 people. This division is based on the value of the previous subject (daily recall value) and the randomized absence number. Then the teacher assigns 1- 6 numbers to each group member. Once the group is established and conditioned, the teacher gives a different problem and asks the students to discuss the questions in their group. In cycle 1, one group answers the definition of Cost of Goods Sold price is group 1, the two groups calculate net purchases of groups 2 and 3, the two groups calculate merchandise available for sale groups 4 and 5 and calculate the Cost of Goods Sold is group 6 and 7. As students discuss in groups of teachers around to observe, guide and help difficulty students and teachers keep reminding students to perform the cooperative skills described earlier in the cycle. After the time specified for the discussion and solving of the questions given by the teacher has been exhausted, the teacher calls the number at random and the student called the number presents the result of the group discussion and is responded by another group in the enthusiastic discussion session of the student not yet visible so that at the time of discussion only certain groups responded answers presented. The teacher gives points to the group that answers and responds to the answers that have been presented. In closing activities the teacher together students summarize the material that has been learned then the teacher gives the posttest to the students. The reflection stage, in accordance with the description of the action and observation that in the introduction the teacher conveys and explains the material taught and conveys

the objectives clearly and in detail. Teachers provide motivation to students so that students can open the insight they have with the plus picture directly in the real world given by the teacher. In the core activities of time taken to explain the material long enough because the material given new so that students ask more, then the teacher divides the students in some groups, the time is much because the teacher should arrange students to hold the discussion calmly, the teacher should give much clues to students because students are still unfamiliar with learning cooperatively. Teachers are skilled enough to guide students in their groups and guide students in presenting random discussion results but students are still less enthusiastic in responding to other group responses. Teachers are very open to students when students find it difficult to understand questions to be solved as well as clues that students do not understand. In the learning process both when explaining and discussing the teacher monitor the students in each group as well as performing the final assessment. At the end of the learning the teacher concludes and ties the material that has been taught with the problems that have been discussed this gives the students encouragement to ask so that there is feedback between teachers and students. Furthermore, the teacher gives the test sheet individually done. During the learning activities irrelevant behavior arose during group discussions. Based on the above description can be drawn conclusions about the deficiencies that must be improved from cycle 1 to the next cycle, among others: a. Lack of explanation given by the teacher, so that students still often ask about the learning. b. The role of teachers who are still dominant in organizing students into groups, presenting material, and guiding students so that learning activities are still focused on the teacher. c. Students are still confused with the learning that is being done. d. In summarizing the teacher's material is still less so that at the end of the learning students often ask about the material. e. In the process of discussion students' ability in question is still very less. f. In summarizing the material the students are still unable to grasp the explanation from the teacher. g. Student learning completeness in class still need to be improved, because still under the criteria of completeness established by school. The revision stage, referring to the results of the explanations in the reflection, the revisions that teachers need to make easier for organizing the students should be more emphasized and clarified about the instructions to be done in cooperative learning so that they can be responsible for their respective groups. Teachers should motivate students more about the importance of asking and responding in cooperative learning. Teachers provide motivation in the form of awards for students' activeness during the learning takes place. Teachers provide more guidance on the material to students who have not completed their study independently. The analysis of student responses is differentiated by three levels: the level of pleasure, the level of novelty, and the level of approval at the level of pleasure almost all students express happy to follow lessons, subject matter, and classroom atmosphere to the way of presentation of material by teachers. At the novelty level some students also stated newly especially on how the presentation of the material by the teacher. Then for the level of agreement most students agree but nevertheless for the disagreement of applying the model to the Numbered Heads Together the same lessons as the others can be seen the percentage tends to be bigger than the displeasure and the unfavorable. Disagreements expressed by students in broad outline according to them that the cooperative learning type Numbered Heads Together there are friends who are not directly involved in the discussion. Then when applied to other learning they disagree because if all the lessons using cooperative learning model type Numbered Heads Together takes a long time and students become bored if done on each subject, learn it independently.

Effectiveness of Learning Outcomes

In cycle 1 known mastery learning of individual has been achieved by 26 students with the completeness criteria of at least 70 in accordance with applicable provisions. For individual accounting subject's minimal mastery is 70, while the unfinished student is a number of 14 people with a value under 70. Meanwhile, for classical completeness in the class reached 65%. So in this cycle 1 for the classical completeness has not been achieved according to the provisions of the school. In cycle 2 known mastery of individual has been achieved by 31 students with the completeness criteria of at least 70 in accordance with the provisions. While the students who have not completed a number of 9 people with values below 70. Meanwhile, for classical completeness in cycle 2 reached 78%. So in this cycle 2 for the classical completeness has been achieved according to the provisions of the school. When compared with the cycle 1 for individual completeness and classical improvement that is in the completeness of individual increased from 28 students to 31 students, while the classical mastery of 66% to 78%. In cycle 3 individual mastery learning achieved by 38 students. Meanwhile, for classical completeness reaches 90%. Based on the provisions then, classical completeness is also achieved according to school requirements. Based on the results of individual and classical completeness above can be seen there is an increase in mastery over each round so that generally can be said by using cooperative learning model Numbered Heads Together effective in improving student learning outcomes.

Student Response to Cooperative Learning Model

Based on the student's response, it is known that students are happy to follow the lesson with the cooperative model of Numbered Heads Together as well as for the subject matter given in this case, the cost of goods sold, income statement, capital change report, and balance sheet at trading company. For opinions during class

lessons in the classroom most of the new states. At the level of novelty material the students learned that for the subject matter, the quiz, the atmosphere of classroom learning and the way of presentation of the material by the teacher most of the students stated new. Meanwhile, at the level of agreement and disagreement, most students agreed to use Numbered Heads Together for the next subject. Then for the possibility of applying cooperative learning model in other lessons most of the students agreed. From the whole discussion it can be said that cooperative learning type Numbered Heads Together on the cost of goods sold, income statement, capital change report, and balance sheet for trading companies get positive response from students. Although acceptable to most of the students, but there are states that are not happy, not new, and do not agree so in this case still need improvements so that will be accepted by students completely.

Limitation and Further Research

From the results of this study, it is advisable for researchers who will develop this kind of learning model in the future to pay attention to motivation to teachers. Model of cooperative learning type Numbered Heads Together requires high motivation on the teacher so that when done, then the preparation of teachers must be really mature and the classroom atmosphere becomes active both teachers and students. In order for the implementation of learning to take place well then the emphasis of the information must be clear so that the behavior is not relevant to students do not appear. Teachers need to pay attention to the selection of subject matter material that will be used in applying cooperative learning model of Numbered Heads Together type, because not all subject matter is suitable to apply cooperative learning model of Numbered Heads Together type.

Conclusions

Based on the results of research using the Action Research design for three cycles in teaching and learning activities with cooperative learning model type Numbered Heads Together on accounting subjects obtained conclusion that is, the application of cooperative learning model type Numbered Heads Together on accounting subjects conducted by researchers always experience grade increase with good qualification. For student activity also experienced an average increase in each cycle with Good qualification. With the implementation of cooperative learning type Numbered Heads Together learning achievement increased visible from the completeness of the classical achieved. Students' responses or opinions to the Totalled Heads Together cooperative learning activities are positive overall and this is something new for students.

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PUBLIC SCHOOLS TEENAGE GIRLS IN MENSTRUAL HYGIENE ENGAGEMENT SESSIONS: SHARING EXPERIENCES WITH STAKEHOLDERS

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ABSTRACT

Meaningful engagement of basic level school girls in discussion and dialogue conferences about the hygienic behaviour during menstruation period is one of the key factors to upgrade the academic achievement. Engagement of teenage girls in workshops and collaboration with the school's female teachers, mothers and friends help to maintain girls' daily presence at school and in reducing failure rates. In this study, three kinds of sharing have been done, that unite girls' meaningful engagement at school in the presence of mothers in relation to cognitive, affective and behavioural domains regarding the menstrual hygienic practices. Among a total of 80 girls, seventh and eighth-graders community basic schools in Nepal, the majority were between ages 13 (34.6%) and 14 (65.4%), responded to the questionnaire. The findings indicate that the cognitive and affective domains in menstruation obtained the lowest means. This result suggests that girls should meaningfully engage in activities that help them recognize their abilities and support their classroom participation. Each of the three identified dimensions is analyzed, and strategies are proposed for developing them appropriately.

Keywords: Community school, meaningful engagement, menstrual hygiene, mothers' participation

Introduction

Meaningful engagement of girls in discussion and dialogue conferences aimed at assuring girls' academic achievement and tasks foster such effort and dedication appropriately and also encourage social participation. This social participation is linked with the mothers' participation in terms of menstrual hygienic practices of the teenage school-girls during their 'periods'. According to Tiwari, Ekkaand Thakur (2018), poor menstrual hygiene practices result in adverse health outcomes in terms of increased vulnerability to reproductive tract infections (RTIs) and its consequences. Encouraging social participation involves precepts of cognitive constructivism, in that it addresses both mental activities performed by the girls and the collaboration with the mothers in the community. Furthermore menstruation and menstrual practices are still clouded by taboos and socio-cultural restrictions resulting in adolescent girls remaining ignorant of the scientific facts and hygienic health practices, which sometimes result into adverse health outcomes (Dasgupta, & Sarkar, 2008; Khan, Ahmad, Singh, & Dwivedi, 2019). Thus, engagement is not necessarily an individual task but one that depends to a large extent on collaboration with peers and community people. Generally, engaged girls are described as those who demonstrate an interest in learning and knowing more about hygienic behaviour. It is associated with myths and misconceptions and poor knowledge of normal physiology. Above all, poor menstrual hygiene is a precursor of various morbidities related to the reproductive tract (Dasgupta, Roy, Bandyopadhyay, & Paul, 2019; Jha, 2019. Rani, & Goyal, 2018; Sivakami, et al. 2019).

Similarly, Rani, & Goyal, (2018) further argues that Adolescence in girls has been recognized as a special period in their life cycle that requires specific and special attention. This period is marked with the onset of menarche. Menstruation is a phenomenon unique to all females. It is still considered as something unclean or dirty in Indian society. Menstruation is a major stage in a girl puberty. It is one of several physical signs that a girl is becoming a woman. Menstruation is generally considered as unclean leading to isolation of the menstruation girls and restrictions imposed on them in the family. These practices have reinforced negative

attitudes towards menstruation in girls. Women having better knowledge regarding menstrual hygiene and safe menstrual practices are less vulnerable to reproductive tract infections and its consequences. (p. 46).

This study was conducted to understand the problems faced by females during menstruation. In this context, Siabani & Charehjou (2018) said that it is a part of the monthly menstrual cycle (regular cycling of hormones) that occurs in the female reproductive system that makes pregnancy possible. Medically, menstruation (also termed period or bleeding) is the process in girls of discharging (through the vagina) blood and other materials from the lining of the uterus at about one monthly interval from puberty until menopause (ceasing of regular menstrual cycles), except during pregnancy. this discharging process lasts about 3-5 days (Siabani, & Charehjou, 2018). Every teen-age girl who is about to enter puberty (the process of the body changes that cause a child's body to become an adult body capable of reproduction) need to be taught or know the basic remedial definition of menstruation and that it is a normal process that females go through as their bodies prepare themselves for potential gestation.

Method

The present study reports findings from the quantitative phase of the study. This phase sought to establish a baseline for understanding the meaningful engagement of teen-age girls within a group of 80 girls-seventh and eighth-grade adolescents- from the community schools in the village and city areas in Nepal.

Research Participants

The participants consisted of 80 seventh and eighth-grade girls at both urban (41.5%) and rural (59.5%) community schools in Kathmandu and Arghakhanchi districts in Nepal. The majority of the studied girls were aged between 13 (34.6%) and 14 (65.4%).

Table 1: Information of research participants

Stakeholders	Total
Girls of grade seven	80
EPH female teachers	4
Mothers	20
School head teacher (HT)	4
Total	108

Instrument

To assess the perception of the girls towards activities related to menstrual hygiene, a questionnaire on meaningful engagement was designed and piloted in two groups of girls to verify their comprehension. The socio-demographic data captured in the questionnaire included age, gender, sector (rural or urban), and mothers' opinions.

The questionnaire consisted of 20 Likert-type items with five response options. The respondents were asked to indicate the extent to which they were involved in schoolwork and activities. The questions were grouped into three types of sharing consisting of the school female teachers, mothers, friends and the school head teachers, with 5 question items each. The sharing with the mother and friends in relation to the cognitive dimension focused on aspects supporting the learning process, the affective dimension centered on aspects concerning school pertinence and peer support and the behavioural dimension concentrated on behavioural aspects that support learning. The questionnaire achieved a Cronbach's alpha of 0.75.

Procedure

This quantitative study complied with all ethical standards appropriate to the field and studies of this kind, including obtaining an informed consent from institutional administrations and parents/guardians for working with minors. The questionnaire was administered during January and February of 2018. Written consent to administer the questionnaire was provided by the principal of each participating school. The researchers visited all the public schools in the municipalities of Arkhakhanchi and Kathmandu, and the questionnaire was administered during the school day.

Firstly, the basic level community school students were provided with the necessary elucidations which consisted of workshop time, period, and presentation which was at the Information, Communication and Technology (ICT) room in schools. Furthermore, all the necessary explanations were also given to the school's head teacher (HT), environment, health and population (EPH) teachers and female teachers. It should be noted that the safety measures and stress management during the mensuration periods had to be considered while

doing any kinds of programme of this study. Few techniques like sharing the problems during the ‘periods’ with the female teachers, mothers, friends and taking some methods of precautions during this time along with the awareness and relaxation including breath control techniques were carried out in everyday life activity at the school.

Data Analysis

The data were analyzed with the SPSS 24 software program. First, frequency counts for all the socio-demographic questions and the Likert-scale items were established, in addition to the response percentages, means, and standard deviations for each option. Second, the relationship between the dimensions and the school sector was analyzed, from which the Pearson correlation was calculated. Additionally, means and standard deviations were calculated for each dimension to determine the menstrual hygienic practices which presented the lowest percentages.

Results

Background characteristics of research participants

Information of students as per the gender indicated that majority of the girls followed Hinduism (51.4%), 17.3% were Buddhists, 3.6% were Christian, 1.6% are Muslim and the rest 26.1% others. In addition, there was a diversity of ethnic composition. 35% were Brahmins, 12.5% were Chhetris, 11.2% were Gurungs/Magars, 9.9% were Newars, 5.7% were Tharus, and 25.7% were others. In the same way, 84.5% of the students spoke the Nepali language as the mother tongue; 4.5% were Newari, 3.1% used the Rai language, 2.1% spoke Tharu and 5.8% other languages as the mother tongue.

Table 2: Background characteristics of the respondents

Characteristics		%
Religion	Hindu	51.4
	Buddhist	17.3
	Christian	3.6
	Muslim	1.6
	Others	26.1
Caste (Ethnicity)	Brahmins	35.0
	Chhetris	12.5
	Gurungs/Magars	11.2
	Newars	9.9
	Tharus	5.7
	Others	25.7
	Language (Mother tongue)	Nepali
Newari		4.5
Rai		3.1
Tharu		2.1
Others		5.8

Based on the results of the questionnaire on meaningful engagement in discussion among the friends (girls) in seven and eight grades, the perceptive aspect was the weakest in the groups of the surveyed students. In this dimension, the percentage of girls (38.9%) occasionally, (15.5%) nearly never, 11.1% never and son on reported sharing the problem of stomach with the friends during ‘periods’ (Table 3). This percentage was expected to be higher, which would have indicated that the girls were aware of the hygienic aspects during their ‘periods’ in their learning process. About students’ abilities to relate what they learned in one discussion to other discussions, only 38.9% reported always or nearly always doing so (Table 1). With regard to whether students sought additional information on topics discussed in class, only 37.4% indicated that they spent time doing so (Table 2). The aspect that appeared with the greatest frequency was trying to understand what an author is stating in a text. A total of 14.1% of the students claimed that they always or nearly always di this (Table 5).

Table 3: When I have stomach pain before menstruation, I share with friends

	Frequency	Percentage	Valid percentage	Accumulated percentage
Occasionally	156	38.9	38.9	38.9
Nearly never	62	15.5	15.5	54.4
Nearly always	82	20.4	20.4	74.8
Never	44	11.1	11.1	85.9
Always	57	14.1	14.1	100.0
Total	401	100.0	100.0	

Table 4: When stomach pain starts before menstruation, I apply the home-made pad

	Frequency	Percentage	Valid percentage	Accumulated percentage
Occasionally	150	37.4	37.4	37.8
Nearly never	60	15.0	15.0	52.7
Nearly always	106	26.2	26.2	78.9
Never	35	8.5	8.5	87.4
Always	50	12.6	12.6	100.0
Total	401	100.0	100.0	

Table 5: I share with my friends when I have menstruation

	Frequency	Percentage	Valid percentage	Accumulated percentage
Occasionally	156	38.9	38.9	38.9
Nearly never	62	15.5	15.5	54.4
Nearly always	82	20.4	20.4	74.8
Never	44	11.1	11.1	85.9
Always	57	14.1	14.1	100.0
Total	401	100.0	100.0	

Table 6: When stomach pain starts before menstruation, I share with female teacher

	Frequency	Percentage	Valid percentage	Accumulated percentage
Occasionally	150	37.4	37.4	37.8
Nearly never	60	15.0	15.0	52.7
Nearly always	106	26.2	26.2	78.9
Never	35	8.5	8.5	87.4
Always	50	12.6	12.6	100.0
Total	401	100.0	100.0	

Students' engagement and sharing their problems

The results demonstrated that the dimensions with the lowest percentages were the collaboration with the friends (6.28%) and the sharing with the mothers (87.2%) and more (Table 7). These outcomes indicate that sharing the problems require reinforcement and motivation in the study population.

Table 7: Means and standard deviations of sharing habit

Sharing with	Mean	Standard Deviation
Friends	3.136	1.174
Mothers	4.20	1.062
Female teachers	4.56	0.656
Head teachers	2.87	1.230

Relationship between the type of sharing in urban and rural schools

The data demonstrate that sharing the problems during the 'period' does not affect school engagement among the girls. The Pearson correlations obtained values were far from 1 (Table 8).

Table 8: Correlations between friends sharing and the students engagement (N=100)

Sharing types and girls engagement	Correlations	Standard Errors
Sharing with the friends (girls of similar age)		
I share problem of the stomach pain during my period with my friends	0.002	0.035
I bring sanitary pad (homemade) during my period and show to my friends	0.042	0.035
My friends suggest me not to be absent during my period	0.069	0.036
My friends share their problems with me	0.104	0.035
We actively participate in workshop and dialogue conference about the menstruation and its sanitary habits	-0.017	0.036

Table 9: Correlations between female teachers' sharing and the students engagement (N=100)

Sharing types and girls' engagement	Correlations	Standard Errors
Sharing with the female teachers		
I am happy to share my problems during my 'period' with my teachers	-0.1076	0.031
I got shy to share menstruation complications with the female teachers	-0.021	0.032
My teacher provides me sanitary pads during my menstruation periods	-0.120	0.036
I feel uneasy in the class during my 'period'	-0.081	0.032
All the female teachers are friendly and I can share all the problems with them	-0.107	0.039

Table 10: Correlations between sharing with mothers and the students' engagement (N=100)

Sharing types and girls engagement	Correlations	Standard Errors
Sharing with the mothers		
My mother is the best in this regard	0.154	0.035
I am happy in the 'period' when I am with my mother	0.155	0.035
I and my friends share with my mother when they are in 'periods'	0.038	0.035
My mother provides us with homemade sanitary pads	0.039	0.036
My mother shares her experiences of hygienic behaviour during menstruation	0.121	0.035

Conclusions

The purpose of the present study was to identify the dimensions that affect school engagement among seventh and eighth-grade teenage girls during their 'periods' in the basic level community schools in Nepal. The results showed that the engagement was good in terms of taking part in the workshop and in all sorts of dialogue conferences. The findings showed that the girls who had 'periods' in the school hours felt uneasy and shy and thus it hampered the study hours as well as their overall academic performance. The girls' engagement either at school or home with the mothers was found good in terms of menstrual hygienic practices. This study believes that conducting such studies will shed more light on the application of homemade sanitary pads in school to lessen their burden. It helps to cultivate enthusiasm among the girls for learning through the provision of meaningful engagement of students in school and at home. A proposed professional development training programme for the public school teachers on menstrual hygienic and stress management needs to be launched. To sum up, there is a strong correlation between the types of sharing among the friends of the same grade, female teachers as well as with the mothers.

Authors' contributions

MA conducted data collection, data analysis, interpretation of the data and drafted the manuscript. PA and PB provided comments, read and approved the manuscript. All authors read and approved the final version of the manuscript.

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REVISITING TEACHERS' INNOVATIVE BEHAVIOR: INDONESIAN CONTEXT

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ABSTRACT

Today's learning has evolved to prepare the students to meet the demands of a very dynamic era, full of technological sophistication and very diverse information accessibility. Teachers' innovative behavior is a phenomenon shaped by contextual factors, e.g. personal, social, and environment context. This paper explores ways in which Indonesia circumstance – and the sociocultural norms within – play a substantial role in affecting teachers' innovative behaviour. This review can help administrators, practitioners, and policy makers gain greater contextualized insight into how teacher innovative behaviour may best be supported within particular cultures and regions. Theoretical and implications for further studies will be discussed.

Keywords: teachers' innovative behavior, elementary school teachers, learning goal orientation, work environment support

INTRODUCTION

Today's learning process has undergone a shift as a result of global social and economic change (Langworthy, Shear, & Means, 2010). The 21st-century learning essential skills often referred to as 4C, which includes critical thinking, communication, collaboration and creativity (The Partnership for 21st Century Learning, 2015; Tabary, 2015) are one example of why the school had to change. The learning goal has also evolved to prepare the students to meet the demands of a very dynamic era, full of technological sophistication and very diverse information accessibility.

Teachers nowadays are not only required to play a role and be responsible for the learning and teaching process, but at the same time, they also expected to be the content experts who master the subject matter. Furthermore, other teachers' roles and responsibilities are as facilitators, mentors, researchers, and innovators in the teaching and learning process (Faekah, Bush, & Nordin, 2018). These various roles made another challenge for teachers, and it surely not easy tasks to do. As of now, Indonesia gradually started to improve the education quality through all improvement efforts, e.g., wide-ranging education reforms, enhancements in teacher training standards, and substantial increases in education spending from the national budget. Nevertheless, under these circumstances, Indonesian teachers may have the urge to be innovative in their work context as the significant role to be part of improving the weaknesses in Indonesia's system and bring it up to the standards of other fast-developing countries in the ASEAN region.

Being innovative is the key so that an institution or organization can continue to survive in a very competitive time like today (Thurlings, Evers, & Vermeulen, 2015). The 21st-century learning environment must be created, and the teacher becomes the main actor who can support the success of the process. In line with the study conducted by Shear, Gallagher, and Patel (2011), one crucial aspect that can support the development of students to meet the demands of the 21st century is the innovative behavior of the teacher. That is, teachers (must) be skilled and adaptive in creating new, unique, and useful ideas that aim to form a conducive teaching and learning atmosphere.

Innovative work behavior of teachers (in this study later will be teachers' innovative behavior/TIB) defined as the sum of all physical and cognitive work activities carried out by teachers in their work context, either individually or in a teamwork, which includes a set of tasks that required the innovation tasks consisting opportunity exploration, idea generation, idea promotion, idea realization, and reflection (Messmann & Mulder, 2012; Thurlings, Evers & Vermeulen, 2015). IWB can be operationalized as the engagement in the five broad innovation tasks (Messmann & Mulder, 2012): *Opportunity exploration*, includes the changes in school structures, events in other organizations, and new insights in one's field of work. This task requires being attentive to the school environment and keeping up with current developments and occasions. *Idea generation* requires publicly addressing significant teacher-related problems, critically examining major beliefs, as well as communicating and discussing concepts for needed changes regarding the issues. *Idea promotion* involves

gaining colleagues and supervisors' support, keeping them up-to-date about the current process, consulting with key actors about approvals and resources, and disseminating ideas within and across the boundaries of teacher's work context. *Idea realization* involves developing a practical model or innovation examples, making others accustomed to the details, examining consequences for undesirable effects, and preparing its real-world application in the work context. *Reflection* covers evaluating the innovation progress, assessing activities and outcomes based on accomplishment criteria, inspecting one's progress during innovation development, and improving anticipatory action for the future.

PURPOSE

TIB is a phenomenon shaped not only by personal factors but also by contextual factors, such as environment and social context. This paper explores ways in which national circumstance – and the sociocultural norms within – play a substantial role in affecting TIB through the development of the proposed hypothesis. Such exploration can help administrators, teacher practitioners, and policy maker gain greater contextualized insight into how TIB may best be supported within particular cultures and regions. This work engages in a theoretical analysis and previous studies to cultivate greater understanding into TIB study in Indonesia.

SIMILAR CONSTRUCTS: TEACHERS' INNOVATIVE BEHAVIOR

It is better to differentiate the meaning of 'creative' and 'innovative,' for these two constructs might have been used interchangeably. There are so many perspectives on innovations, and this section needs to define the term "innovative," as the concept would lead to further discussion. In the Cambridge Dictionary, 'creative' illustrated as producing original and unusual ideas, something creative or is able to create, while 'innovative' means using new methods or ideas. Kwan, Leung, and Liou (2018) emphasize that creativity is part of innovation, and an innovation can be called 'innovation' when a creative idea is applied.

The use of creative and innovative concepts in this case often overlaps and can indeed be used interchangeably. The concept of creative work behavior is part of the discussion of innovative work behavior which states that creative behavior emphasizes the process of creating new and useful ideas, while innovative behavior includes the process of forming ideas to the implementing creative ideas. When examining the development of studies related to innovative work behavior, it can be seen that at the beginning of its development, the previous study in 'creativity at work' and 'innovative work behavior' treated as uni-dimensional constructs. It was only in the early 2000s that this study of innovative work behavior began to develop as a multi-dimensional construct so that all dimensions in it became crucial studies to be discussed (De Jong & Den Hartog, 2007; De Jong, Den Hartog & Zoetermeer, 2008).

In a nutshell, the teachers' innovative behavior discussed in this study will cover a multidimensional, dynamic, and context-bound construct.

Table 1: The similar construct of teachers' innovative behaviour

THE IMPORTANCE OF TEACHERS' INNOVATIVE BEHAVIOR IN INDONESIA

What is thought to be innovative is related to innovations as ideas, products or processes that are new and applicable for a particular individual, group, or organization and that are useful for the same of a different individual, group or organization (Messmannn & Mulder, 2011). Moreover, this definition also explains that innovation meaning depends on the unit of analysis. It also related to a particular context which the innovation be implemented and might lead to a significant change of practice. It is worth noted that the innovations that will be discussed in this paper are not limited only to originalities but can be actualized by existing ideas/products/processes as long as they are appropriate and novel for the particular implementation and contain a redefinition of underlying assumptions and goals (Messmannn & Mulder, 2011).

Moreover, innovation in education means something beyond what we are currently doing and make a unique idea which can help us to do our job differently. Similar to Serdyukov (2017) that explained the innovation in education are intended to increase productivity and learning efficiency and/or improve learning quality. This intention can appear in a newer pedagogic theory, methodological approach, teaching methods, instructional tool, learning process, or institutional structure that, when implemented, produces a significant change in teaching and learning, which leads to better student learning.

One of UNICEF's highest-profile activities in Indonesia related to the successful story of innovation implementation was a program called Creating Learning Communities for Children (CLCC) focusing basic education and gender equality in 78 districts of 15 provinces in Indonesia. The goal of the program was to

improve the primary schools' quality through the introduction of (1) effective School-based Management (SBM), (2) Active, Joyful, and Effective Learning (AJEL); and (3) the community participation. This program was concentrating on giving schools and communities for managing their resources and assisting them in using these resources more effectively. School and communities were taught to develop school plans that integrate all resources (from the government, the community and the CLCC program) and to do resources management transparently with an emphasis on refining quality of the teaching-learning process. The program had also included modules such as Life-Skills, Inclusive Education, and Child-Abuse Prevention into school education (UNICEF, 2010). Moreover, after the governmental regulations regarding decentralization and regional autonomy, each school now can create its own curriculum, and this is why TIB became crucial.

PREVIOUS STUDY: PREDICTING FACTORS OF TEACHERS' INNOVATIVE BEHAVIOR

Research on TIB is originated from the discussion of innovative work behavior at the beginning of the 21st century and initially focusing on creative behavior of employees, whose topic later developed into innovative work behavior on employees. Later research began to compare innovative work behavior in the context of non-educational and educational organizations which found different results. For now, it led to the development of further research topics focusing on the innovative behavior of teachers in the school environment (Bysted, 2013; Hammond, Neff, Farr, Schwall & Zhao, 2011; Thurlings, Evers & Vermeulen, 2015; Woods, Mustafa, Anderson, & Sayer, 2018). In the context of TIB, the learning environments are not only limited to in-class-activities, but it also involve out-of-class activity (in and out of the school itself). Teachers' related competencies are required for the accomplishment of the work tasks and also contain opportunities for actual work experiences. For that reason, teachers would need to create students' learning process as meaningful and encouraging as possible because it would have high relevance for the students' future jobs. Additionally, the learning environments would be related to students' necessities, interests, and personal context, in order to make the learning environments to be personally relevant and optimally challenging for students (Messmann & Mulder, 2010).

Many factors influence the innovative behavior of teachers. In general, the previous study on teachers' innovative behavior discusses the relevance of demographic, personal, and environmental aspects (Hammond et al., 2011; Thurlings et al., 2015). This grouping will follow the principle of the triadic reciprocal determinism theory of Bandura (1977), which explains how the behavior has reciprocal relationships that influence each other with the context of the individual and the environment. Bandura theory applied because the innovative behavior of the teacher is assumed to have a dynamic and contextual relationship with aspects of the individual and also the environment, so the discussion of this research is vital to see how the dynamics and interactions of the three elements (behavior, individuals and environment).

On personal aspects, curiosity, personality, perception of problems, motivation, and job satisfaction are predictors of TIB (Messmann & Mulder, 2011). Furthermore, work autonomy and mental involvement positively moderate the relationship of job satisfaction with the innovative behavior of teachers (Bysted, 2013). While in the discussion related to competence, it was found that educational competencies, technological competencies, and social competencies had a positive correlation with the innovative behavior of teachers (Zhu, Wang, Cai & Engels, 2013). How teachers perceived the impact of innovation (perceived impact) and their intrinsic motivation on the task influences how he performs innovative behavior (Messmann & Mulder, 2014). For aspects related to personality, proactive personality, affective conditions (positive and negative) and creative self-efficacy (Li, Liu, Liu & Wang, 2017), personality traits (openness and conscientiousness) influence TIB. Furthermore, satisfaction with meeting basic psychological needs, intrinsic motivation, and occupational self-efficacy (Klaeijnsen, Vermeulen & Martens, 2018), as well as learning goal orientation and occupational self-efficacy (Runhaar et al., 2016), also influence TIB.

Regarding the environmental aspects, the study of innovative behavior of the teacher discusses the relationship with communication with colleagues, school leaders and students; activating resources, efforts to create work transparency, organizational class, student characteristics, school work scope (Messmann & Mulder, 2011). The personal network of teachers in schools turns out to influence how he performs the behavior of innovation (Messmann, Mulder & Palonen, 2011). Likewise, trust in innovation (Bysted, 2013), school environment and peer support (Zhu et al., 2013), perceptions of social support (Messmann & Mulder, 2014), principal empowering leadership, teacher exploration, and role conflict (Gkorezis, 2016), support creative learning and innovative teaching. Positive correlation to innovative behavior of teachers also found in teachers who have a clear understanding of the functions/tasks that must be implemented within the work context as a teacher (Runhaar et al., 2016).

Specifically, concerning demographics data, job tenure is one significant predictor of innovative behavior, but the results are still inconsistent whether it is positively or negatively correlated because differences country had different outcomes (Bysted, 2013; Woods et al., 2018). In the meta-analysis study, the level of teacher education and years of service did not correlate with the innovative behavior of the teacher (Hammond et al., 2011). The teacher's education period has a positive influence, while gender does not influence the innovative behavior of teachers (Runhaar et al., 2016). Other studies found age and gender influenced teachers' innovative behavior in the teaching-learning process (Bysted, 2013). Teaching experience under five years shows a positive correlation with innovative behavior carried out by teachers (Loogma, Kruusvall & Umarik, 2012; Zhu et al., 2013).

THE AREA TO BE EXPLORED IN THE TEACHERS' INNOVATIVE BEHAVIOR RESEARCH

TIB, as well as innovative work behaviour, is dynamic and contextual (Messmann & Mulder, 2012). The existence of connections that occur in the teacher as an individual cannot be separated from the environmental influence (e.g., school organizations, and social environment). To have a deeper understanding of how individual, social and environmental context relate to each other, consequently, we investigate the relationships between learning goal orientation (as the predictor of personal aspects), work environment support (as the moderating variable of environmental issues) and by considering demographics data (cultural background, tenure, and teaching experience).

Based on a previous study and investigation of the proposed development of follow-up studies, it is known that not many studies have discussed the indirect relationship, moderation and mediation of teachers' innovative behavior (Bysted, 2013; Zhu et al., 2013; Runhaar et al., 2016). This study will investigate the interaction between personal and environmental aspects of the teachers' innovative behavior, which will be proposed as a hypothesis in later study. One of the proposed variables is learning goal orientation, defined as the intention to develop one's competencies through learning new skills and through learning to complete new and more complex tasks (Vandewalle, 1997, 2018; Runhaar, 2008). These two studies indicated there was a positive effect of learning goal orientation on innovative behaviour. Why learning goal orientation is so important? Utilizing the causes of goal orientation in a school setting would be beneficial, especially to teachers, because it will promote the learning culture that positively supports teachers from keeping up with the challenges related to the work context (Vandewalle, Nerstad, & Dysvik, 2018). As in Indonesia, it would be crucial to investigate teachers' learning goal orientation in relation to their innovative behaviour.

Hypothesis 1: There is a positive association between teachers' learning goal orientation and innovative behaviour.

The suggestion of discussing the supporting factors and obstacles to TIB at the individual and school level as an organization (Thurlings et al., 2015; Zhu et al., 2013) increased the importance of this study. The condition of Indonesia, with its rich culture, is expected to influence teachers' perception and implementation of their innovative behavior. The influence of multi-cultural aspects, norms, and values embraced by one's understanding of something considered creative and innovative (Kwan, Leung, & Liou, 2018), made one's cultural background related to ethnicity will influence their innovative behaviour.

Hypothesis 2: There is a positive association between teachers' cultural background and innovative behaviour.

We would also examine other demographic aspects that are related to years of service (tenure), and teaching experience. These selective considerations are based on supporting and hindering factors at the individual level (Zhu et al., 2013; Thurlings et al., 2015) and inconsistent findings in the previous study related job tenure and TIB (Hammond, et al., 2011; Bysted, 2013; Woods, et al., 2017). More years in teaching experience may bring more knowledge on teaching-learning strategy especially in handling students' needs and diversity (Loogma, et al., 2012; Runhaar, 2008), but the findings in job tenure did not consistently correlate.

Hypothesis 3: Teachers with longer years of teaching experience tend to be more innovative, but it may not relate to their job tenure.

Teachers need support, direction, and feedback from others, as well as they, need to share and talk to each other. Furthermore, although colleagues or co-workers may exert a positive and the most significant influence of TIB, however students, school leaders, managers, and external agent also need to provide support by sharing and talking with other teachers (Klaeijns, et al., 2017; Thurlings et al., 2015; Wang, Xue, & Su, 2010). For this reason, we choose variable work environment support (WES) as one of the moderating variables in this study.

Hypothesis 4: Work environment support moderates the relationships between learning goal orientation to teachers' innovative behaviour.

The need for contextual measurement tools by considering personal and environmental factors also need to be studied (Thurlings et al, 2015). Furthermore, the school context and the different systems applied in schools in

Indonesia can be important areas to investigate. The levels of education seemed related to the students' characteristics also contribute to TIB. Previous studies executed in teachers from secondary school level, vocational colleges and higher education (Messmann & Mulder, 2010; 2012; Gkorezis, 2015; Klaijnsen, et al., 2017; Loogma, et al., 2012; Runhaar, 2008; Vermeulen, Kreijns, van Buuren, & Van Acker, 2017), but not many are implemented in elementary school level.

Why elementary school teachers? As the foundation of students' lifelong learning process, elementary school becomes an essential level that a student must take. The OECD/ADB report (2015) mention the quality teaching practice and innovation are emerging in some primary schools. Moreover, good teachers made a significant difference in teacher-student relationships, so the students got motivated to engage in the learning process. While there is substantial progress in teaching practices, the challenge was to keep up the drive for continuous growth in quality across all provinces in line with the context for quality improvement set out in Indonesia's National Education Standards (OECD, 2015; Fasih, Afkar, & Tomlinson, 2017).

In the context of Indonesian elementary school teachers, the innovative behavior will be related to any ideas related to teaching-learning methods/products/processes (could be modified and not necessarily novel) that leads to optimizing students' learning. The school management, as in public and private school, and different school location may create a different organizational climate for teachers' innovative behavior (Chang, Chuang, & Bennington, 2011; Huang, 2004). We speculate this difference would positively lead to some impact on how teachers' willingness to be innovative in their work context.

Hypothesis 5: Teachers in public school has a different level of innovative behavior compared to teachers in private school due to the organizational climate in each school type.

CONCLUSION

This review proposed some hypothesis related to teachers' innovative behaviour of which the novelties are (1) its coverage of the dynamic and context-bound construct as the implications in Indonesia related the accomplishments of five innovation tasks become crucial; (2) study on elementary school teachers, while the previous study implemented in the level of secondary school, vocational school, or higher university; (3) this study proposed the interrelationship hypothesis of many variables to TIB, including the moderating effect of WES, type of school, and also the demographic data (years of teaching, cultural background, and tenure).

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THE LEADING ROLE OF THE SCHOOL DIRECTOR IN IMPLEMENTING THE NEW CURRICULUM

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ABSTRACT

The leading role of the school principal in the implementation of educational policies at the school is irreplaceable, but also a legal obligation. One of the main policies after the law on pre-university education is the curriculum framework and core curriculum. With the Curriculum Framework (revision, 2016), the responsibilities of the school principal both as an administrator and as a teacher education professor are increased.

The importance of research - Given the requirements arising from the implementation of the 2011 Curriculum and leadership training, it is necessary to make the leading role of the director in implementing these changes in the school essential. Specifically, we were determined to explore its role and impact in implementing the changes envisaged by the New Curriculum Framework in Kosovo schools.

Based on the results of the research it can be seen that school directors encounter difficulties of different nature. Given the research data it appears that they are not sufficiently informed with the content of curriculum, so that they can support the teachers in this process.

Other challenges, according to the directors, are: poor school infrastructure; weak supply of schools with basic tools and materials, ineffective IT cabinet, lack of inter- net access, which makes it difficult to implement the new curriculum successfully in schools, lack of textbooks, lack of appropriate training for curriculum,for teachers,school directors and for other staff, lack of information for additional clarifications, great difficulty in preparing the daily plan and their ambiguities are mainly on day-to-day outcomes and criteria, the administrative part of the diary, and an important challenge for it is the assessment and approach based on the new curriculum where the student should be evaluated in VP1 (with three or more components and VP2, which is considered to take much time.

Through this research we aimed to assess the current situation in pilot schools and those that expect the implementation of new curriculum with a focus on the leading role of the director in this important process for education.

Keywords- Role of Leadership, School Directors, Curriculum, Implementation, Schools.

Introduction

The school director is responsible and initiator for the processes that are being developed at school. He is responsible for the implementation of legal and sub legal acts, on the quality of the educational process. As a director of the institution, the director has the opportunity to do various planning to improve the flow to increase the quality of school work. The school principal during the planning process should begin with the assessment of the current situation in the school, such as the impact of external factors on the processes in the school that it runs, the internal factors and the general social, regional and national conditions. Organization of teaching work always has been one of the most important problems in teaching theory and practice. As a result of the permanent development of science, the development of educational policies and the reformation of the education system, especially the theory of learning and teaching, the old ways of organizing can not be followed in their entirety in modern school but should be reformed so that to respond to the demands of the time. The research focused on the leading role of the director in the implementation of the New Curriculum. An educational institution must have the capacity to demonstrate its curriculum to others and to allow it to be analyzed by others. Director is directly responsible for the implementation of the curriculum in school policy. He or she must have full knowledge of the new curriculum and be able to guide the implementation process. However, based on the findings of the research we can not say that school directors are sufficiently informed about the content and implementation of New Curriculum. The curriculum provides extensive autonomy at the school level to plan and to act in the implementation of the curriculum in accordance with the specific conditions of teaching staff, the school infrastructure and location specifications in which schools operate. In this way each school is allowed to build its profile in the best interest of its students and the locality in which it operates. Schools consider the strengths and weaknesses of each teacher and in the best way organize the learning process. (MEST, 2011). School directors face various difficulties in implementing the New Curriculum, based on infrastructural conditions, lack of cabinets, lack of internet networks and didactic materials. Despite the training conducted by school teachers there are still many uncertainties about the curriculum implementation in school from teachers and taking into account the issue of some young directors / Acting, schools and their failure to inform this process shows that there is no effective support from the directors, to improve this process.

Review of literature

According Bazeley (2007) to start a study, first start by reviewing what is already known on the subject of research, as are examining the implications in relevant theories on the subject, and other methods that are used to investigate the matter. Thus, a comprehensive literature study was done to see what has been done so far in connection with the implementation of the curriculum in schools, and especially the role and influence of the school principal pursuant to New curriculum. Reviewed reports, international research and studies and national in order to see, good practices from other countries, the challenges faced and finding their solutions and look at similarities and differences about the role of the school principal in implementing Curriculum. It is important that the director must know how to manage and lead the process of change. Director must ensure that he / she has the necessary policy documents, legislation and administrative instructions. He / she should study these documents and adopt all the basics of curricular changes. Director as instructional leaders should lead the implementation of the curriculum in a school. According Mazibuko (2003), the main job of a school leader is to help teachers to change, correct, to create a positive climate in the school, to exercise effective management behavior and handle input from the community effectively.

Mason (2004), states that a school leader must ensure implementation of the curriculum to inspire and empower staff, motivated and mediated between staff and educational policy, mentoring and support and monitor progress. In addition, he says that in providing school leadership, the director should also oversee curriculum planning at school, help develop learning activities, develop and manage evaluation strategies, ensure that teaching and learning time is used in effectively, ensure that classroom activities are with the student at the center, etc. Another challenge is related to the curriculum change management is motivated staff to accept change envisaged. According to Mason (2004, p 4) motivation must be understood as a management strategy to convince people to accept change and alternation. But in advance, directors should be well informed about the change that will happen and only then will he be able to inform, schedule, monitor and support the process of changing the school. Aspect of the implementation of changes in the school's study analyzed by many scholars of international education, as matter of great importance in raising the quality of work in schools. In terms of implementation of modern changes in student learning engage in a comprehensive manner on school work, he sees the purpose and importance of what works, is aware of his abilities and opportunities and motivated to maximum effort. (Jones, 2008 pg.16)

For changes in education and education are some basic criteria, such as the study of any problem of educational activity starts from a positive assessment of the progress in the science of pedagogy and other scientific disciplines close to the (research education and schooling must be interdisciplinary), in order to apply it to investigate, it is safe and will give positive effects and enable positive processes for the development of educational institutions. Another criterion includes surveys of selected problem in the pedagogical practice of other countries in order to see how it is studied in other circumstances, as the problem is solved paved and what has given effects. The revolutionary changes in society that are developing towards the democratization and humanism of our society condition the gradual change of the school's position in society, bring about radical changes in internal relations, put the student's position in the process more active and objective educational, and affect the greatest affirmation of the humanistic values in which the whole life and work of the school is based. "Under the scheme for pedagogical innovation studies at school are three main levels that form a continuous progress, as assimilation (holding), change and transformation levels. Each level is supposed to be more advanced than the previous ones" (Dr.Mandiq, 1985, p 32).

In the second half of the 20th century, innovations arise from the need to develop students' creative abilities as important elements of their creative activity as valuable factors that make it possible to control the works of modern civilization, subjugate them to their own human needs, create new values, and change their society and relationships according to human needs. The role of the Director in the implementation of Curriculum - One of the tasks of school leaders, which directly affects the quality education and the best school is the continued support of teachers and other relevant factors to the school in the implementation of strategic documents, such as : curriculum, school programs and curricula and standards of school-based assessment. (Zylfiu H., H. Devetaku, L. Shala, 2013, p.41) The Director must inform teachers, and others, with the constant changes dealing with school and learning process, should make them part of the change and must also support them in their implementation. Forms to support and sustain teachers are numerous, such as through school-based workshops, through regular consultations, through mentoring teachers from the school principal and teachers through cooperation between themselves. The role of the director in this regard in the creation of a common concept for curriculum, standards, plans and programs, school curriculum planning and evaluation. Regarding curriculum, the focus of the director and teachers should be the achievement of teaching competencies, such as: (MEST, 2011):

- Communication and expression competence (MEST, 2011)
- Thinking competence
- Learning competence
- Competence for life, work and work and the environment
- Personal competence and
- Civil competence.

Research questions

1. How are school principals informed about the implementation of the New Curriculum at School?
2. What is the role and accountability of the director in implementing the New Curriculum at School?
3. What is the director's influence on implementing the New Curriculum at School?
4. What are the requirements for successful implementation of the New Curriculum at School?
5. What are the challenges faced by school principals in implementing the New Curriculum at School?
6. What are the activities the director has to undertake to implement the New Curriculum in the school?
7. How can the findings of this research contribute to strengthening the role of the director in implementing the new curriculum?

METHODOLOGY

Research model - The research is mixed quantitative and qualitative, descriptive and evaluative.

Population and Sample - All the school directors in Kosovo comprise approximately 900, excluding professional schools that are not included in the sample. I select it from this population sample of 30 school principals who have piloted and implemented curriculum and 70 principals from other schools who will start the implementation of the curriculum in September 2017. Pilot School where applicable of curriculum in Kosovo there are approximately 96 schools of secondary education. In the sample are included directors from the 9-year schools, high schools from the village and from the city from different municipalities in Kosovo

Instruments and methods

- Method of resource analysis- For the purposes of this research and in accordance with the object and purpose used, all theoretical sources of resources, mainly of external authors but also of local ones, which take on the role and impact of the school principal should have this in implementing the New curriculum in the school.
- Survey Method - Using this method I have sought to provide the data collection with the opinions of directors and deputy directors.
- Statistical processing - Standard statistical procedures were used for processing the research results. The obtained data is presented in percentages, graphs and tabular form. The processing of the results was done with the SPSS (Statistical Package for the Social Sciences) package.

Research Instruments – Questionnaire

For the basic research tool we used the questionnaire for school principals. The questionnaire contains open questions, multiple-choice and closed questions and was anonymous.

Analysis and data collection procedure

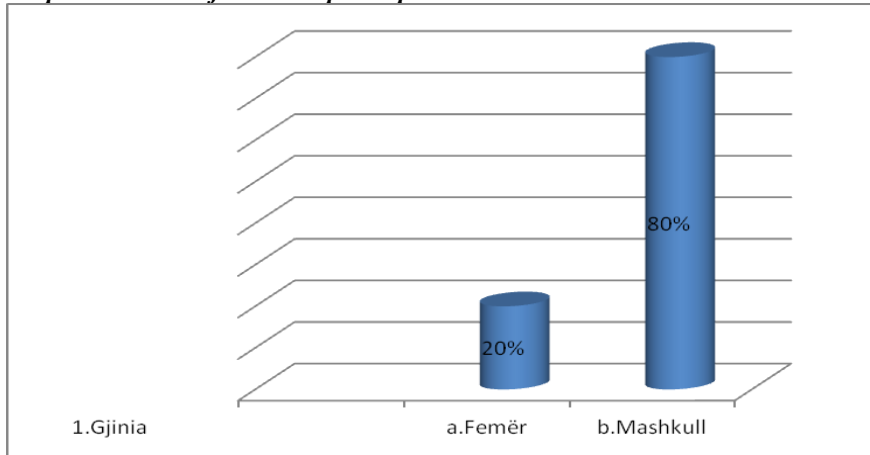
The school directors were informed, the date, time and day when the questionnaire was completed with them, as well as in some schools after contacting a responsible MED of the questionnaire distribution electronically, the relevant officer sent the school directors in his municipality and returned it to us. The data obtained were analyzed and processed in the SPSS program

RESULTS AND ANALYSIS OF DATA

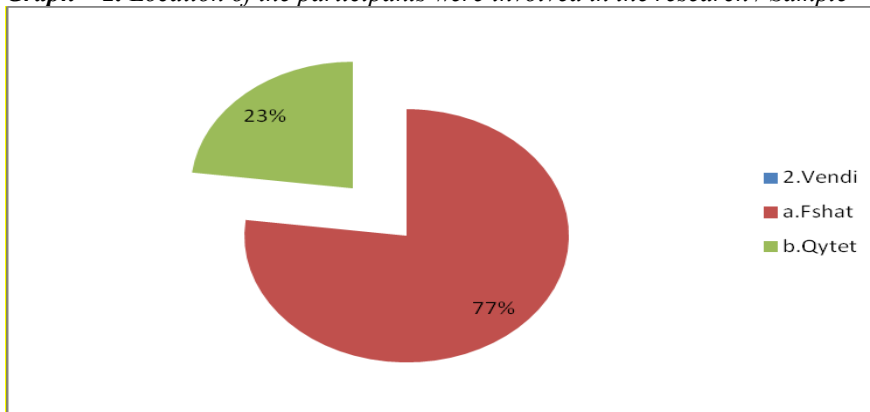
Research, analysis, processing of the data obtained was done in order to have a clear picture of the information, requirements arising from the directors to the successful implementation of the curriculum, the challenges faced during the implementation, the role and influence of the director of the school in the implementation of New Curriculum. The findings of this study contribute to strengthening the role of director in implementing the New curriculum.

Sample structure see in the chart below.

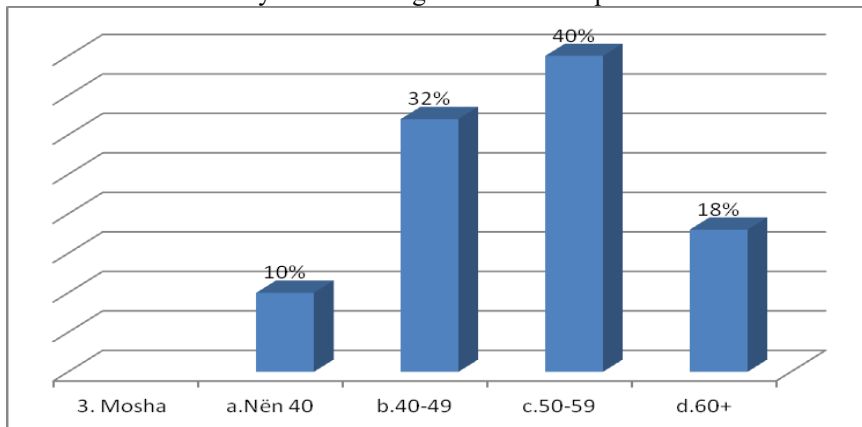
Graph 1. Gender of research participants.



Graph 2. Location of the participants were involved in the research / Sample

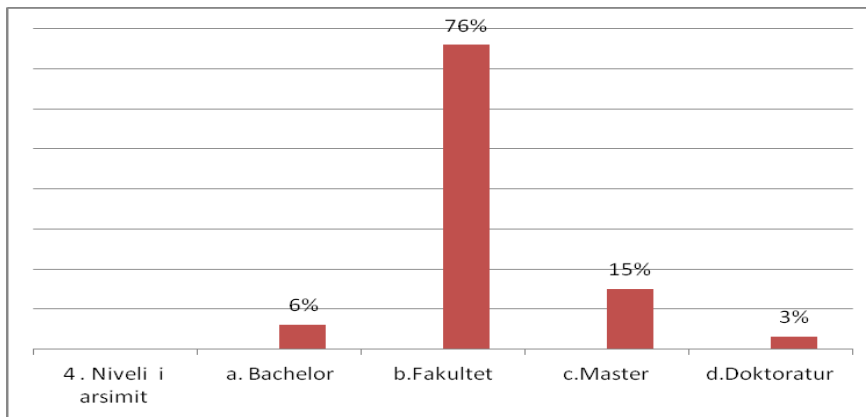


The research was conducted in different municipalities in Kosovo, where 23% of the cities, while 77% involved schools from the country's different regions. In the sample were included both sexes, as shown in the diagram.



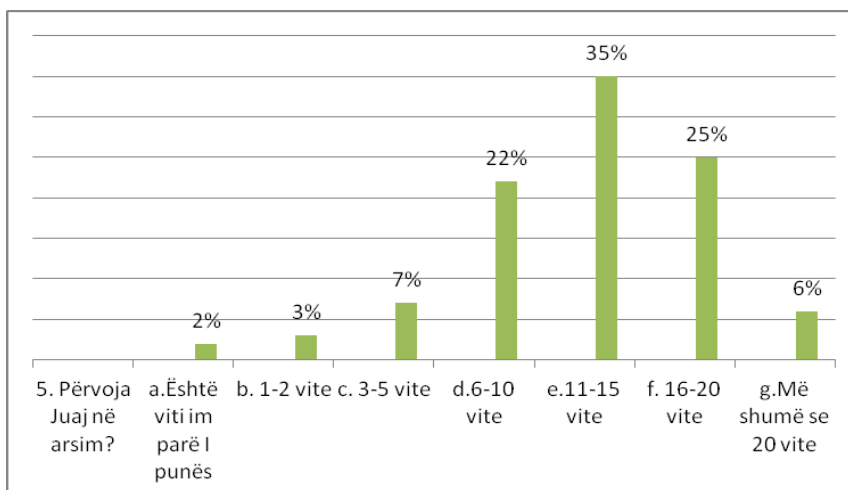
Graph 3. Age of participants involved in the research.

The average age dominates with 40% of 50 to 59 years old of schools have principals 18% of people over the age of 60, which means before retirement, and an average of 32% aged 40 to 49, and only young 10% of them under 40 years old.



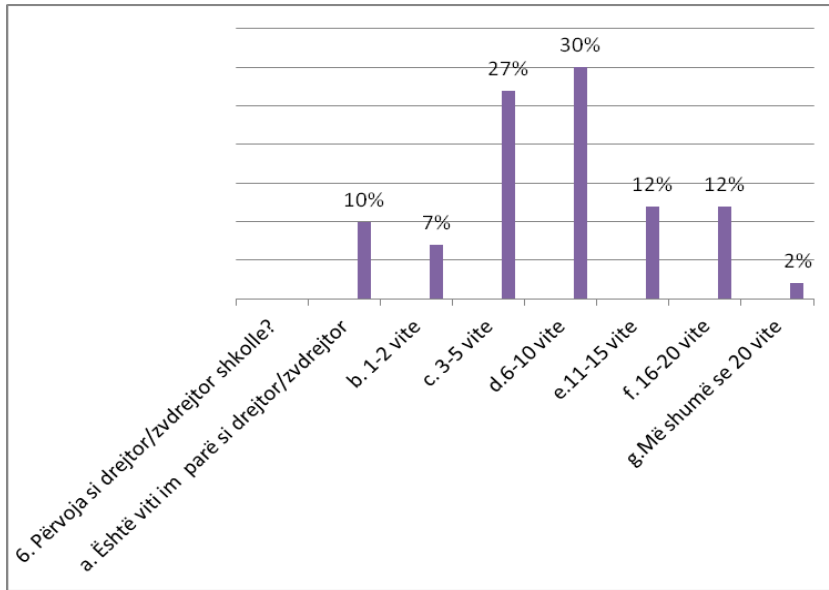
Graph 4. Level of education of the participants involved in the research.

From 94 school directors involved in the research, 76% of them have completed the faculty and meet the criteria for school management, we have a 15% master and 3% doctoral degree, while 6% have a bachelor degree or in the continuation of the faculty, having in mind that with the bachelor level they are not entitled to be a school principal.



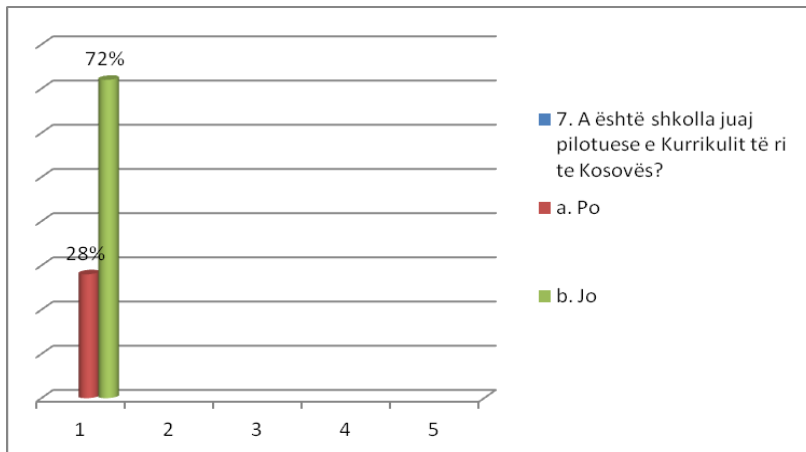
Graph 5. Experience of participants involved in research in education

Based on AI no. 08/2014 MEST for selection of primary school principals is a three year experience in education / educational institutions, and from the data we see that we have a 2% those with the first year of work in education but also with concern is 3% who have 1 to 2 years of work experience in education who drops a percentage of about 5% do not meet the primary criteria for selection of school directors.



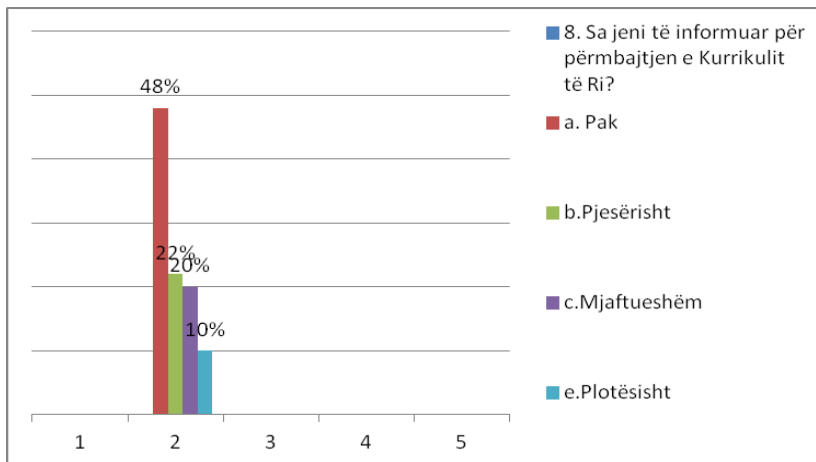
Graph 6. Experience as deputy director and school principal,

In Graph 6, the data show that 10% of them have their first year of work as a school principal, while the biggest difference is from 6 to 10 years of experience with 30% of them. All respondents involved in the survey have experience in leadership.



Graph 7. Is a pilot or non pilot school implemented New curriculum

Graph 7 shows the difference between the schools involved in research, where 72% of them are schools that have not yet started piloting the New curriculum and will start this September(2017), while in 28% of them are schools that have started piloting / implementing of new curriculum in their schools.



Graph no.8. How much are informed about the content of New curriculum, school directors.

Although in September 2017 will begin the implementation of curriculum in all Kosovo schools, out of 94 schools involved in research, it turns out that 48% of school directors are very little informed about the content of curriculum, 22% consider it to be partially acquainted with curriculum content, while 20% sufficient and only 10% of them think that they know best / full content of curriculum. It is worrying the fact that there is insufficient information of school principals with the contents of curriculum, because they expect a professional support for teachers in implementation.

9. What is your role in the implementation of the new curriculum in school?

Regarding the role of implementing curriculum in school, school principals, generally said that schools should be managed well and have priority-setting of the learning process quality, by involving all relevant stakeholders with impact in this regard, students, parents, teachers and stakeholders and external partners to influence and serve as a connecting bridge of cooperation.

There are also opinions that the role of director in the implementation of the new curriculum in schools should be based on the basic documents included in the Core Curriculum and the beginning of the development of pre-university curriculum for each curriculum area, to implement them in the learning process.

The role of the Director in the implementation of the curriculum is the development of a common concept for curriculum, standards, plans and programs, school curriculum planning and evaluation. Regarding curriculum, the focus of the director and teachers should be the achievement of learning competencies, which are foreseen in New Curriculum, as:

- Competence of communication and expression
- Competence of thinking
- Learning competence
- Competence for life, work and work and for the environment
- Personal skills and
- Civic competence

While schools that have not yet started implementing the New Curriculum and are expected to start this year, they say they are not yet involved in this program and that the role of the director is very significant and has a significant impact on the quality of school work. This impact is reflected in all areas: in the process of teaching and learning, in cultural activities, extracurricular etc.

10. What is your impact on the successful implementation of the New Curriculum at School?

The impact of school principals for successful implementation at the school of New Curriculum according to respondents' responses is timely information to teachers on the demands and changes in the teaching process, cooperation with all stakeholders, to ensure how these changes are reflected, various debates with teachers, students and parents, about all the deficiencies and advantages of the curriculum, support and support of professional advice, consultations on curriculum areas, providing the tools needed for curriculum implementation.

Other responses to the impact of the school director on the implementation of New curriculum have the following: - Involvement of teachers in trainings organized exclusively for the New curriculum in cooperation with the MED in this regard.

We also have specific answers that make it clear that school directors are not well informed about the Curriculum and its implementation.

"My influence would be sufficient for implementing the New Curriculum at school if I was sufficiently informed about it."

11. What are the requirements for successful implementation of the new curriculum in school?

The requirements for successful implementation of MA in schools by the responses of school directors can be generalized based on data that are expressed as follows:

- Schools should have enough autonomy to access changes
- Appraising teachers' performance; the expansion of the students' spirit into the overall work of the school as well as the community; inclusion; development of student competencies, governance and financial autonomy of school accountability in all areas.
- Improving working conditions and successful implementation of the new curriculum, it requires more accurate information on curriculum teachers, trained teachers, changed texts, didactic materials for teachers related to the new curriculum, etc.
- Inclusion of teachers in training for the new curriculum
- Training of Director and Quality Coordinator
- Change the school textbooks based on curriculum
- Equipment with cabinets, computing, and cabinets for natural science
- Internet device to teaching classes
- Provision of the necessary cabinets school that will help improve teaching and learning.
- The vision and commitment of every teacher in the implementation of this program.
- Continuous supervision by Self evaluation team to successful implementation.
- Occasional control by external experts or MEDs
- Organization of training, seminars and various workshops for teachers and the school principal;
- Provision of professional staff (in this case for second foreign course);
- Provision and adaptation of textbooks according to the New Curriculum.
- Create conditions and circumstances for successful implementation.
- Teachers must take change seriously.
- In addition to theoretical knowledge of literature and training teachers to implement in practice.\
- Teachers to work standard curricula and programs according to the New Curriculum.
- Structure of lower secondary education.
- My request is that from the moment the team is called to the workshop to train, it was good for the trainers or trainers to be a curriculum expert to better understand the purpose of the training.
- Material conditions are Key Challenges starting from paper and to computers and video projectors with the Internet.
- Elaboration and explanation accurate and clear that the purpose of curricular change is for the good of establishment and Quality Assurance in pre-university education, after identifying the changing needs has come up to Curriculum changes are forwarded to global changes in terms of raising the quality of education. Then, the continued support etc ..

12. What are the challenges you have faced with the implementation of the New Curriculum at School?

Challenges faced by schools under the MA, from the responses of school directors are:

- Poor school infrastructure; poor supply of schools with basic, non-functional IT tools, basic materials, non-Internet classes, and so on. disables the successful implementation of the New Curriculum in schools.
- Insufficient staff rate
- Lack of textbooks for teachers, labs, lack of appropriate teacher training, lack of sufficient information for additional clarification ..
- Most had challenges from teachers, who have a lot of things were unclear, especially, the great difficulty they had in preparing the daily plan. Their uncertainties have been on the outcomes and criteria that are on a daily basis.
- Do not have the seriousness and lack of commitment of some teachers to work in this direction. Challenges and insufficient knowledge of the requirements foreseen by the curriculum as well as insufficient and initial experience in implementing this program.
- The administrative part of the diary
- The biggest challenge is presented in the assessment. When the student in VP1 (with three or more components and VP2) is evaluated, it takes a lot of time, and the directors form the school curriculum teams to share the work together. are a team. Support the Director in their role as a developer of the curriculum.
- Commitment and permanent cooperation between: the director, the school coordinator, curriculum coordinators and field staff as a whole.

- Organization of teacher trainings, provision of school material, and mutual cooperation with MEST and MED for curriculum development
- Maintaining a school-based training (which we have held) to get ahead, hold well-trained and well-trained trainings by MEST, change the textbooks, provide didactic terms, focus on supply with various tools of technology of information, etc.

13. What are the activities undertaken by the director / or intends to take to implement the MA in school?

- Activities undertaken by the director / or intends to take to implement the MA to school responses to the open question that the data are expressed as:
 - The organization of work with the teacher staff
 - Holding regular meetings for the successful implementation of the New Curriculum
 - Timely notification of the teachers, assignment of quality coordinator, reorganization of professional assets by curriculum areas
 - Daily working across school;
 - Notifying the teachers about the necessary training;
 - The provision of textbooks (whether they are derived from MEST);
 - Providing didactic material and other teaching aids;
 - Consultations with the teachers and the structures of the MED about problems or eventual ambiguities, etc.
 - Delegating responsibilities to relevant persons for the implementation of the curriculum,
 - Drafting of the development plan, the development of school regulations, the formation of the governing bodies within the school as SHC, the Parents Council, Student Council, professional assets, incl taught for everyone in implementing this process, the operation of all governing bodies and professional school, information on time, and the appointment of a working teams that will be taken directly to the realization of this process.
 - To require communication between teachers, especially those teachers who have in class successfully collaborate with teachers who have uncertainties, as well as mentoring director class teacher.
 - Evidence of stagnation and weaknesses and commitment to their successful improvement and advancement as well as inclusion in the relationship between student-teacher and parent.
 - To follow the work of teachers and evaluate how the new curriculum is influencing the quality, as students are feeling the change being implemented by teachers.
 - Directors form school curriculum teams to share works together. Professional assets with quality coordinator are a team.
 - Supporting the Director in their roles as curriculum developers.
 - Director shall establish conditions, all inclusive space. Ensure that schools be learning environment safe and entertaining for students, teachers and parents. Make school networking.

14. How do you follow the changes to the curriculum implementation at school?

Respondents say openly that changes to the implementation of the New curriculum are followed through meetings with relevant school stakeholders, with systematic observation; by measuring the results before implementation and with the entry into force of the New Curriculum; On the external school evaluations. . . by analyzing pupils' outcomes, talking to parents, and monitoring the work of teachers, hospitations, learning outcomes, focus group meetings etc.

Some say that in drafting the school development plan and annual action of that and calendar designed for preparatory activities for the implementation of Curriculum-are instruments through which they can redirect changes for implementing the new curriculum. Hiring in the classes, submission of two-month plans, student assessment, etc. Close cooperation with the quality coordinator, analysis and comparison of the results of the achievement test, curriculum monitoring.

Of course, in cooperation with all governing bodies ranging from MEST, MED with the school's governing board, parents council, the students' council, as well as the assignment of groups in certain areas of the new korrikulit, and obtaining information the teachers themselves, where they will have difficulties, we will talk together, only that the implementation of this program will be much more successful.

Notification and approval of curriculum or curriculum with the choice of the School governing board, holding meetings with the Parent Council for information, holding meetings with the pedagogical council of teachers, support in the implementation of the curriculum in focus or based on competence. Focus on learning and

accountability, integrating and coherent, focusing on accountability and accountability, and with the Quality Coordinator to actively engage in a continuous process to improve teaching methodologies based on different sources and not only on freedom, teaching materials in collaboration with MED, etc ...

Continuous supervision of the learning process, identification of needs for support and support of the implementation of the curriculum, development of monitoring and evaluation instruments, monitoring of student assessment process, etc.

15. In the given table - Rotate an answer

How much do agree with your role in school management according to the following statements? Please sign set	Degree of compliance with:			
	No	Some what	Yes, for the most part	Yes, completely
1.1 My job is to meet with changes in legislation and to convey that teachers and school staff	0	0	64	30
1.2 Information and awareness of the school community about the possibilities and new curriculum requirements	0	6	34	60
1.3 Analysis of the overall context of the school	0	0	24	70
1.4 Self-evaluation of school performance in relation to the new curriculum expectations	0	3	27	67
1.5 Determination of the common school vision and mission	0	0	6	88
1.6 Compilation of the development plan for the implementation of the school curriculum	12	6	22	54
1.7 Develop annual action plan for the implementation of the curriculum	4	8	16	66
1.8 Possible calendar of preparatory activities for the implementation of the school curriculum	6	5	23	60
1.9. From I depend to a large extent the quality of school work.	0	5	19	70

CONCLUSIONS

The role of the Director in the implementation of Curriculum - One of the tasks of school leaders, which directly affects the quality education and the best school is the continued support of teachers and other relevant factors to the school in the implementation of strategic documents, such as : curriculum, school programs and curricula and standards of school-based assessment. (H.Zylfiu, H.Devetaku.L.Shala, 2013, p.28). The director should inform teachers and others with the ongoing changes concerning the school and the teaching process, should make them part of the change and should also support them in their implementation. Forms to support and sustain teachers are numerous, such as through school-based workshops, through regular consultations, through mentoring teachers from the school principal and teachers through cooperation between themselves.

The role of the director in this regard is the establishment of a common concept for curriculum, standards, plans and programs, school curriculum planning and evaluation.

Regarding curriculum, the focus of the director and teachers should be the achievement of learning competencies, which are (MEST, 2011):

- Competence of communication and expression (MEST, 2011) competence
- Thinking competence
- Learning competence
- to live, work and environment
- Personal competence and civic competence.

Conclusions

1. Regardless of the research were included 94 schools / pilot school principals and not pilot the implementation of curriculum, there is a lack of awareness of directors of schools where applicable new curriculum.

2. Necessity of involvement of directors in training / workshops to be familiar with the curriculum content, given that 48% of them declare that they are less informed em contents of curriculum.

3. Necessary need for additional training for teachers for drafting annual plan based on New curriculum
4. The school must have sufficient autonomy to approach the changes
5. Improvement of working conditions, equipment cabinets, computing, and cabinets for natural science, the Internet equipment, provision of teaching materials, etc.
6. Provision of textbooks based on New curriculum
7. Inclusion of all teachers in new curriculum training
8. Training of Director and Quality Coordinator for New curriculum
9. Continuous oversight by Self evaluation team for successful implementation.
10. Control / monitoring and advising by external experts or MEDs

Recommendation

- To provide detailed information to school principals with the contents of New curriculum.
- To organize special training for curriculum for director and quality coordinator
- Implement the Guidelines for Guidance on Curriculum Implementation in Schools
- Provide infrastructure conditions in schools in order to facilitate the implementation of New curriculum
- Provide school textbooks based on New curriculum.
- Promote the role of director in implementing the New curriculum as well as the added responsibility and his accountability in school processes in general and curriculum implementation in particular.

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