

# Experiential Learning; Learning Abilities that Enhance Problem Solving Ability

Jacinta Bwegyeme\*, John C. Munene\*\*

## Abstract

*Problem solving is one of the most critical aspects of an organization and a well thought out approach to problem solving has a direct correlation to an organization performance. The study sought to establish the effect of the four Kolb learning abilities (Concrete experience, reflective observation, abstract conceptualization and active experimentation) on problem solving ability of the administrators in a university setting in the academic registrar's department. A cross sectional survey design was employed. The population consisted of all administrators in the Academic Registrar's department in the selected four Universities in Uganda. Using Kreijcie and Morgan Sample size determination table, out of the population of 191 administrators, a sample of 123 was drawn and 103 responded. Simple random sampling was employed to give equal chance to every administrator in the department. The findings indicate a significant association between all the Kolb learning abilities and problem solving while abstract conceptualization and active experimentation are predictors of problem solving. It is recommended that administrators in universities and similar organisations should be trained in abstract conceptualization and active experimentation skills to enhance their problem solving ability. It is further recommended that research be conducted on a larger sample of administrators.*

**Keywords:** *Experiential learning, Kolb learning abilities, Problem solving, Critical aspects.*

**JEL Classification:** I210

## INTRODUCTION

This paper aims at establishing the relationship between Kolb learning abilities and problem solving, it is intended to make a modest contribution towards highlighting essential abilities that enhance the problem-solving capability of employee at the work place. Problem solving is one of the most critical aspects of an organization. Effective problem solving can reduce the bottom line, increase productivity and decrease defects. A structured problem-solving approach has a direct correlation to an organization's performance and the ability to repeat successful outcomes (Thompson, 2015).

The importance of concrete experience or practice in acquiring expertise and problem-solving skills has been emphasized in several studies (Barclay, 1996). Experiential learning has been explained by different scholars as a bridge between theoretical and practical knowledge. Kolb (1984) experiential learning proposes a four-cycle model, consisting of concrete experience, reflective observation, abstract conceptualization and active experimentation. According to Kolb the personal experience is the basis for observation and reflection. Through observation and reflection, hypothesis/ concepts are formed and the formed hypothesis help the learner to try out new experiences. Jarvis (1998) and Kolb (1984), define experiential learning as, "the process of creating and transforming experience into knowledge, skills, attitudes, values, emotions, beliefs and senses." Dixon (1999) suggests that one is

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\*Senior Lecturer, Faculty of Business Administration and Management, Nkozi, Uganda Martyrs University, Uganda. Email: [jbwegyeme@umu.ac.ug](mailto:jbwegyeme@umu.ac.ug) (Corresponding Author)

\*\*Professor, Graduate Research Centre, Makerere University Business School, Kampala, Uganda. Email: [jcmunene@mubs.ac.ug](mailto:jcmunene@mubs.ac.ug), [jcmunene@gmail.com](mailto:jcmunene@gmail.com)

learning is about interpreting what we experience in the world and we create our own unique interpretation, which mediates our actions. In as much as experience has been linked to problem solving and expertise in several studies, it has been noted that experience alone neither guarantees expert performance nor problem solving. Kolb and Fry (1975) and Kolb (1984) argue that to be an effective learner, a person must engage in four fundamental learning abilities associated with each of the learning dimensions of concrete experience, reflective observation, abstract conceptualization and active experimentation.

Although Kolb (1984) recommends the importance of all the four learning abilities, various studies have concentrated on reflection (Helyer, 2015) and linked it to learning and problem solving while other abilities have limited specific researches. Other studies have concentrated on learning styles and problem solving yet we operate in a volatile environment that requires all the abilities if we are going to be effective. Literature review indicates that concrete experience is vital, however it should be coupled with the development of other learning abilities if practitioners are to remain relevant to their organisations. Barclay (1996) argues that practice or real experience is necessary but not a sufficient condition for learning; 'there are many examples of people repeating mistakes over and over again'. Honey and Mumford (1993) suggest that the best way to learn how to learn from experience is to adopt a discipline which requires completion of all stages in the Kolb learning cycle. Honey and Mumford (1993) argue that Kolb (1984) suggested that people learn more effectively by reviewing each occasion in which learning may take place while Schon (1983) introduced reflection in action and reflection on action phrases which connotes the rethinking required to review one's actions and their outcome.

Bwegyeme and Munene (2015) study of action learning in universities established that the registrars who had served more than ten years were able to identify complex problems and handle them after a reflective environment was exposed to them. Bwegyeme and Munene (2015) study implied that in as much as the registrars had concrete experience, there were organizational issues that were in their jurisdiction yet they could not solve them, just because they had not reflected on them. Many studies, however, have linked learning styles to problem solving, this study links the four Kolb learning abilities to problem solving in a workplace environment, and the researcher believes that the employees need training / acquisition in all the Kolb leaning abilities to enhance problem solving ability.

This study therefore uses Kolb's model to relate the learning abilities (derived from Kolb cycle) to problem solving. The study specifically establishes the relationship between concrete experience abilities and problem solving, reflective observation abilities and problem solving, abstract conceptualization abilities and problem solving, and active experimentation abilities and problem solving.

### ***Problem Solving***

Charness (1998) explains problem solving as the activity that enables someone to attain a desired state from an initial one in which it is not immediately clear how to reach the desired state. On the other hand, D'Zurilla and Nezu (1990) defines problem solving as "the self-directed cognitive-behavioural process by which a person attempts to identify or discover effective and adaptive solutions for specific problems encountered in everyday living." According to D'Zurilla, Nezu, and Maydeu-Olivares (2004) and MIRECC (2009) assert that the problem-solving skills are derived from the problem-solving process and these include, problem definition and orientation, generation of alternatives, decision making and implementing and verifying solutions.

Problem definition and orientation is the first step in the problem-solving process and it requires one to understand the nature of the problem, to identify obstacles and explain realistic objectives and perceive a cause-effect relationships. This step involves thinking about the difficulty

experiencing, understanding the problem, and contemplating why the situation is distressing. The second stage is generation of alternatives and it refers to the ability to brainstorm multiple solution ideas. However, generation of multiple solutions increases efficiency, gives the best alternatives and widens the learning experience. The third stage is decision making and it requires to identify potential consequences, predict the likelihood of such consequences and conduct a cost benefit analysis of desirability of these outcomes. This stage calls for the narrowing down of the options, each option should be realistically examined to predict the chances of implementation. The fourth stage is implementation and solution verification which involves the ability to carry out a solution plan optimally, monitor its effects, trouble shoot if the solution is not effective and self-re-enforce if the outcome is satisfactory (Charness, 1998).

The motivation for the present study was the recurring challenges in public universities in Uganda hence, the researcher considered acquisition and enhancing of problem-solving skills would probably equip university administrators with skills to solve student and workers issues before they erupt into strikes.

## **LITERATURE REVIEW**

### ***The Kolb's experiential learning theory***

The Kolb's experiential theory is a four-stage cyclical theory of learning and a holistic perspective that combines experience, perception, cognition, and behaviour. The theory presents a cyclical model of learning, consisting of four stages; concrete experience (or do"), reflective observation (or "observe"), abstract conceptualization (or "think"), active experimentation (or "plan"). One may begin at any stage, but must follow the cycle (Kolb,1984).

The first stage, concrete experience is where the learner actively experiences an activity such as a lab session or field work. The second stage is reflective observation, this is when the learner consciously reflects back on that experience. The third stage is where the learner attempts to hypothesize a theory or model of what is observed. The fourth stage is active experimentation, is where the learner tries to plan how to test a model or theory or plan a forthcoming experience. Kolb (1984) argue that to be an effective learner a person must engage in four fundamental learning abilities associated with each of the dimensions of the cycle (Kolb,1999).

### ***Concrete experience and problem solving***

Concrete experience abilities are derived from the first stage of the Kolb cycle. These abilities suggest being involved in experiences and dealing with immediate human situation in a subjective manner. The concrete experience stage begins with doing something in which the individual, team or organisation are assigned a task. Key to learning therefore is active involvement. In Kolb's model one cannot learn by simply watching or reading about it, to learn effectively the individual, team or organisation must actually do. Concreteness requires that an individual must immerse themselves in the immediacy of the moment, relying on their intuitive and affective responses to the situation. Sadoski, Goetz, and Fritz (1993) conducted several experiments that showed that concreteness, i.e., the ease of imagery, had strongly positive impacts on comprehension and recall of information. While Kamis and Khan (2009) established that problem solving is dependent on content and context, not only are problem solvers unable to form pure abstractions, free of concretes, but they do not even clear their minds from previously solved problems. Problem solvers, solve a current problem by retrieving a prior concrete problem/solution and forming an analogy to it (Ross & Kennedy, 1990). A number of researches established that concreteness plays a key role in comprehensibility, interest, memory of textual information (Sadok et al., 1993). Concrete experience emphasizes ability to employ

feeling, intuitive understanding in the present reality and sensitivity towards other people's emotions and values. People who are strong in concrete experience abilities are people-oriented, value interpersonal relationships, perform well in an unstructured environment and treat each case as a unique case (Zanich, 1991). It has been observed, however, that some workers do not easily engage in new experiences others cannot engage in new experiences regularly. They are stuck in the old experiences.

### ***Reflective observation and problem solving***

The second stage in the cycle is that of reflective observation. This means taking time-out from "doing" and stepping back from the task and reviewing what has been done and experienced. Reflective observation demands a tentative, impartial perspective toward a learning situation and the willingness to patiently consider many alternatives. At this stage lots of questions are asked and communication channels are opened to other members of the team. People with reflective observation skills are good at making objective observations and making judgments. Concrete experience is not enough for learning (Boud, Keogh, & Walker, 2013; Mezirow, 1990; Schon, 1983). Dewey (1933), Kolb (1984), Mezirow (1992) concluded that reflection is key to transforming experience into learning. Reflection helps to identify problems, emerge solutions or engage in collective inquiry (Fenwick, 2010). The process of reflection starts with the individuals attempt to define what is wrong with the situation. The individual defines the problem and constructs a tentative conception based on individual's observation and investigation of the situation and the conditions of the situation (Horup, 2004). A lot of literature has been written on reflection and the concepts of reflection, critical reflection, and reflective practice have been mentioned frequently in literature of learning and problem solving (Dewey, 1933; Kolb, 1984; Mezirow, 1990; Schon, 1983). However, there is limited quantitative literature relating reflection and problem solving.

Mezirow (1990) explains reflection as an assessment of an individual's perception, thought, emotions/feelings and action while Woerkom (2003) defines reflection as a mental activity aimed at investigating one's own action in a certain situation and involving a review of the experience, an analysis of causes and effects and drawing conclusions concerning future action. Basing on Woerkom (2003) understanding of reflection it is implied that reflection has a purpose of altering or improving future decisions.

Whereas reflection focusses on the immediate presentation of details of task or a problem critical reflection is the questioning of contextual aspects taken for granted, cultural, social and political within the task/problem (Reynolds, 1992). Critical reflection involves a critique of the presuppositions on which our beliefs have been built. Woerkom's (2003) definition introduces us to the reflective practitioner perspective and problem solving. The theory of Reflective practitioner was greatly influenced by Schon (1983) who refers to reflective practice as reflection on action and reflection in action. In their problem solving professionals rely heavily on "knowing-in-action" (a kind of tacit knowledge) and reflection. Schon coined the term reflection-in-action to describe the way various professionals deal with situations of uncertainty and instability. From literature it is clear that reflection is important for reconstruction of knowledge, questioning of existing situation and problem solving context.

### ***Abstract conceptualization and problem solving***

Abstract conceptualization is the process of making sense of what has happened and involves interpreting the events and understanding the relationships between them. Abstract conceptualization abilities require thinking, analyzing, logical thinking, rational evaluation and building theories. Individuals who score high at these abilities are good at making systematic plans, manipulating abstract symbols and using quantitative analysis. The use of precision, the rigour of analyzing ideas, the

scientific approach and the quality of a neat conceptual model are the strength of individual with abstract conceptualization. At this stage the learner makes comparisons between what they have done and what they already know and reflect upon it. The learner /worker may draw upon theory from textbooks for framing and explaining events, models they are familiar with, ideas from colleagues, previous observations, or any other knowledge that they have developed. It is observed that at this stage one may solve the problem even when he does not have a concrete experience, but from knowledge gathered from different sources. Abstract conceptualization is essential if the worker is to unlearn in order to embrace new assumptions in order to solve the problem in the situation (Kolb, 1984; Klein & Heuser, 2008). Without unlearning a worker cannot accommodate change, for he will continue in the old practices and procedure. Literature review on abstract conceptualization is seemingly scanty, there is need to build literature in this section.

### ***Active experimentation and problem solving***

The final stage of the learning cycle is when the learner considers how they are going to put what they have learnt into practice. Active experimentation abilities emphasize actively influencing people, practical application and changing situations. (Kolb, 1984). The individuals with active experimentation abilities are willing to take risks, to get things done and to take responsibility about accomplishing objectives. They are good at taking actions to influence their external environment and like results. Planning enables taking the new understanding and translates it into predictions as to what will happen next or what actions should be taken to refine or revise the way a task is to be handled. For learning to be useful most people need to place it in a context that is relevant to them. If one cannot see how the learning is useful to one's life then it is likely to be forgotten very quickly. Active experimentation stresses action, participation and risk taking in learning with an emphasis on practically testing previously generated concepts (Kolb, 1985).

Review of literature indicates various studies have investigated the relationship between Kolb learning styles and problem solving behaviour (Stabell, 1972; Donoghue, 1994; Katz, 1990; Yonutas, 2001); however, limited empirical research has been done relating the Kolb learning abilities with the problem-solving ability. Literature review reveals various debates concerning the learning styles and limited assertions on the contribution of each specific Kolb learning ability what is emphasized most is the learning cycle.

## **METHODOLOGY**

A cross sectional quantitative survey design was employed to address the hypotheses of the study. The population consisted of all administrators (senior registrars, assistant registrars, Faculty administrators) of the Academic registrar's departments in four Ugandan universities. The population indicates that all registrars had worked for more than five years an indicator that they all had a reasonable experience at the workplace, had various concrete experiences and were in position to evaluate the abilities that they employed during problem solving. Out of 191 administrators, a sample of 123 was drawn and 103 responded. The sample size was calculated using Kreicjie and Morgan sample determination table. To obtain the sample, simple random sampling technique was employed where every administrator in the Department of Academic Registrar had equal chance of participation. The researcher used a questionnaire to collect data and a pilot study was conducted to establish construct validity and reliability of instrument and the computed Cronbach alpha coefficient results were above .70. A Pearson correlation and a multiple regression analysis were executed to test the relationships.

## RESULTS

Table 1: Correlations

Variable	1	2	3	4	5
Active experimentation 1	1				
Reflective observation 2	.166	1			
Abstract conceptualization 3	.484**	.478**	1		
concrete experience 4	.521**	.270**	.473**	1	
Problem solving 5	.518**	.248*	.400**	.410**	1

\*Correlation significant at 0.05 (2 tailed)

\*\* Correlation significant at 0.01 (2 tailed)

To establish the relationship between the Kolb learning abilities and problem solving, a Pearson correlation was employed and the results are presented below.

Hypothesis 1 stated that there is a relationship between concrete experience abilities and problem solving. The findings in table 1 indicate a significant association between concrete experience abilities and problem solving, ( $r = .410$ ,  $P = 0 < 0.01$ ). The results indicate that the more concrete experiences abilities one has the more he will be able to solve problems at the work place. The findings imply that for someone to effectively solve problems he requires a concrete experiences abilities.

Hypothesis 2 stated that there is a significant relationship between reflective observation abilities and problem solving. The results of the correlation indicate a positive significant relationship between reflective observation abilities and problem solving, ( $r = .248$ ,  $P = 0.011 < 0.05$ ). The findings imply that in order to solve problems the reflective observation abilities are essential.

Hypothesis 3 stated that Abstract conceptualization abilities influence problem solving ability. The findings indicate a significant positive relationship between abstract conceptualization abilities and problem solving ( $r = .400$ ,  $P = 0 < 0.01$ ). The results suggest that for one to be able to solve problems, abstract conceptualization is important. One must be able to formulate assumptions from the formerly observed facts to be able to apply them in a new situation.

Hypothesis 4 stated that Active experimentation abilities affect a person's problem-solving ability. The results denote a significant positive association between active experimentation and problem solving ability ( $r = 0.518$ ,  $P = 0 < 0.01$ ). The results seem to suggest that for one to be able to solve a problem he/she should have active experimentation abilities. Doing is key for problem solving. A person cannot declare that he has solved the problem unless the assumptions have been implemented and they are working.

The results from Pearson correlation support all the four hypotheses, implying that there is a positive association between Kolb learning abilities with problem solving. In order to establish the predictive power between the learning abilities and problem solving a multiple regression was employed.

Table 2: The multiple regression

Model	Unstandardized Coefficient B	Standardized Coefficient B	T	Sig
Constant	2.087		4.474	0.00
Active Experimentation	.249	.245	2.473	.015
Reflective Observation	.049	.083	0.851	.396

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Abstract Conceptualization	.167	.203	1.878	.050
Concrete Experience	.047	.060	.584	.561

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Dependent Variable; Problem solving

R2 = 0.208; R change = 0.208; F = 0.000; Adjusted R2 = 0.178; Change F = 6.889

To establish the predictive power of the variables a multiple regression was run, irrespective of the learning cycle stages. The multiple regression results in table 2 above are represented below;

H1 stated that there is a significant relationship between concrete experience and problem solving. The results, however, indicate that concrete experience abilities is not a predictor of problem solving (beta=0.60, p=0.56) which implies that having a concrete experience abilities does not necessarily guarantee problem solving. H2 stated that there is a significant relationship between reflective observation and problem solving. The results indicate that reflective observation abilities is not a predictor of problem solving (beta=0.083, p= 0.386) which implies that reflective observation is a necessary condition for problem solving but not sufficient to cause problem solving. H3 stated that there is a significant relationship between Abstract conceptualization abilities and problem solving. The results indicate that abstract conceptualization is a predictor of problem solving ability (beta=0.203, p= 0.050), the hypothesis is thus supported, which implies that abstract conceptualization is a sufficient condition to cause problem solving. H4 stated that there is a significant relationship between active experimentation abilities and problem solving (beta=0.245, p=0.015). The results indicate that active experimentation is a predictor of problem solving, the hypothesis is thus supported, which implies that as one improves in active experimentation abilities he will improve in problem solving abilities. The multiple regression model (concrete experience, reflective observation, abstract conceptualization and active experimentation abilities) explains 17.8% of the variance in problem solving as demonstrated by the Adjusted R square (0.178).

## DISCUSSION

The article aimed at establishing the effect of learning abilities on problem solving. The study was guided by four objectives. The first objective was to establish the relationship between concrete experience and problem solving, the second was to establish the effect of reflective observation on problem solving, the third was to determine the effect of abstract conceptualisation on problem solving and the fourth was to establish the effect of active experimentation on problem solving. In order to achieve the objectives a Pearson correlation was employed and a multiple regression was run.

H1 stated there is a significant relationship between concrete experience and problem solving. The correlation results indicate a positive significant association between concrete experience and problem solving however the regression results do not support the hypothesis which imply that concrete experience abilities do not always predict problem solving. Concrete experience emphasizes ability to employ feeling, intuitive understanding in the present reality and sensitivity towards other people's emotions and values. The results further imply that being exposed to concrete experiences/events does not mean ability to solve the problem at hand, the problem solver must be able to integrate what he already knows with the situation at hand. Barclay (1996) asserts that experience is a necessary, but not a sufficient condition for learning and problem solving, there are many examples of people repeating mistakes over and over again. In order to capitalize on concrete experiences as learning opportunities and maximize the possible gain, it is necessary to take some time to consider and reflect on what happened in the new event and turn experience into learning (Barclay, 1996). Various authors agree that for concrete experience to have an impact on problem solving an individual must be able to make meaning out of it and must be able to transfer it to different contexts at the work place (Coleman, 1976).

Therefore, according to Coleman (1976) and Barclay (1996) intuition and employing feelings in a concrete experience is not sufficient to solve problems. The concrete experience is also limited by policy, procedure and culture of the organisation and the context, take an example where organisational memory is not valued and every individual making a decision based on organisation procedures not on experience. On the other hand, also, the concrete experience abilities encourage use of gut / intuition, which at times may not be the best way to solve the problem especially where we have complex problems that do not have a definite answer (O'Neil, 2007 & Marsick, 2007). Bwegyeme and Munene (2015) study in universities established that most administrators who were attached to the academic registrar's department had spent above ten years hence had various concrete experiences, were exposed to many activities. However, the registrar's department had complex problems which the administrators could not solve yet they were in their jurisdiction, it was observed that complex problems are solved by intuition but critical reflection and analysis. Bwegyeme and Munene (2015) also established that when there are complex problems in the work environment, if employees do not stop to reflect/ponder on their experiences they will not solve the problems no matter how experienced or talented in concrete experience abilities. Bwegyeme and Munene (2015) further observed that over experience can even be a hindrance to learning and appropriate problem solving as the person is stuck in what he has done for so many years, therefore it is clear that experience and use of gut feeling with no reflection does not result in effective problem solving. It was further observed that the organisation should purpose to create a reflective environment. Concrete experience abilities without reflection may not be able to solve complex problems which do not have a definite answer.

H2 stated that there is a significant relationship between reflective observation and problem solving. The correlational results show that there is an association between reflective observation and problem solving, while the regression results show that reflective observation is not a predictor of problem solving. The results therefore imply that reflective observation does not cause problem solving. Reflective observation require understanding the meaning of thoughts and situations by carefully watching and listening. However, if a worker just thinks, watches things from different perspectives and appreciates different opinions this may help identify the problem but it is not sufficient to solve the problem at hand or in the work environment. An individual may watch the problem/ challenge for years without making a move. Reflective observation also refers to reflecting on ones actions, but if one does nothing about his past actions no change will be registered. Hardless, Nilsson, and Nulden (2005) in their study of organisational development concluded that reflection leads to learning and that the new understandings will guide future actions.

On the other hand, Snoeren, Niessen, and Abma (2015) acknowledge the value of reflection in testing and correcting spontaneously and unconsciously gained knowledge, however, Snoeren et al. (2015) argue that the importance and the great attention paid to the concept of reflection in the literature is overstated in relation to learning and problem solving within the organisation. Jarvis (1998) observes that there are workplace situations where one just memorises the process/ instructions to solve the problem in such cases reflection is irrelevant, one replays the same instructions in a similar experience, also in cases of acquisition of manual skills and physical skills to solve a problem. Reflective observation abilities are not enough to enhance problem solving ability at the workplace. Therefore for reflection to lead to problem solving, one must determine to do something about his past actions in order to cause a change.

H3 stated that there is a significant relationship between abstract conceptualisation and problem solving. The correlation results indicate a positive significant relationship between abstract conceptualisation and problem solving and the regression results indicate that abstract conceptualisation is a significant predictor of problem solving. This implies that when the worker has abstract conceptualisation abilities he will be able to solve problems. Abstract conceptualisation

abilities are; being able to question and reason ideas for deeper understanding, being able to hold discussions with colleagues at work, sharing work experiences with others, being able to analyse events and make conclusions. As the worker reasons, analyses, shares experiences he develops the capability to solve problems. The strength of knowledge sharing on problem solving has been explained by different authors (Baum & Ingram, 1998; Yang, 2004, Kumaraswamy & Chitale, 2011). Abstract conceptualization is essential if the worker is to unlearn in order to embrace new assumptions (Kolb, 1984; Klein & Heuser, 2008) in order to solve the problem in the situation. Without unlearning a worker cannot accommodate change, for he will continue in the old practices and procedure. The power of conceptualisation cannot be underrated, that's why it is always said in management problem solving that a problem that has been understood/conceptualised is as good as solved (Spradlin, 2012).

H4 stated that there is a relationship between active experimentation and problem solving. The correlation results indicate that there is a significant positive association between active experimentation and problem solving and the regression results indicate that active experimentation is a predictor of problem solving, the regression results further support the hypothesis. The results imply that if a worker has active experimentation abilities he will be able to solve the problems in the work place. The active experimentation abilities include being able to integrate what one does with the experiences encountered in life, the worker can borrow from memory when stimulated by a challenge, can generate alternative solutions for a problem, can make an action plan and implement it, is responsible about objectives, works hard to get things done and believes in learning by doing. When the worker is able to integrate his experience with his challenges he will be able to borrow from experience to solve the problem at hand.

The study implies that, action is vital for problem solving, without action nothing will change. Learning by doing encourages the worker to try out situations and through trial and error one is able to solve the problem. Savery (2015) discussed that self-exploration is a solution to understand things easily & solve problems instantly. The present study highlights the robust significance of active experimentation in problem solving, implying that even if a person has all the other abilities, if he cannot act, the problem will not be solved therefore action is very important for problem solving. This is in agreement with Kolb (1985) Learning style inventory, where the two learning styles (Accommodating and Converging learning styles) that were observed to be for problem solvers had a component of active experimentation. Therefore every worker should endeavour to acquire implementation skills because plans or strategies are of little value if one does not follow-through to execute the plan developed. Implementation is the test period to see if one made the best selection of the resources.

The abstract conceptualization and active experimentation abilities are essential for problem solving, this is an agreement with Kolb styles of learning. The converging style is for people who score high in abstract conceptualization and active experimentation. People with this converging learning style are best at finding practical uses for ideas and theories and they have the ability to solve problems and make decisions based on finding solutions to questions or problems (Kolb, 1985). The results of this study could be relevant to explain today's rapidly changing environment which places great demands on administrators' abilities to respond and adapt to these changes: the ability to 'learn' has become vital, administrators are faced with new challenges every day, therefore there is need for abstract conceptualization to handle complex and metamorphosing challenges. On the other hand abstract conceptualisation and active experimentation are essential in a university setting where use of thinking, analysis and reason should be upheld. Administrators should develop abstract conceptualisation abilities to solve problems using scientific evidence other than doing things from intuition and feelings. The inquisitive academic staff will in most cases question the decisions of administrators that do not have a scientific base.

Concrete experience and reflective observation abilities are necessary for developing problem solving ability but not sufficient to predict problem solving. The results are in agreement with the theory, however, what this study wants to emphasise is not the learning styles but the learning abilities that are relevant for every administrator to solve problems. Therefore similar organisations should train their employees in abstract conceptualisation and active experimentation. The context of this research was a University and it could have had an impact on the results.

## **CONCLUSION**

The purpose of the study was to establish the effect of experiential learning abilities on problem solving. Specifically the study addressed the relationship between concrete experience, reflective observation, abstract conceptualisation, active experimentation and problem solving. The research established that concrete experience and reflective observations are associated with problem solving but they are not predictors of problem solving while abstract conceptualisation abilities and active experimentation abilities are predictors of problem solving. The results further highlight that concrete experience abilities are not enough for one to solve complex problems which have no definite answer. The results have demonstrated that abstract conceptualisation and active experimentation abilities are essential for people working in a university context and similar institutions.

### ***Practical implications***

The results demonstrate the strength of abstract conceptualisation and active experimentation abilities as predictors of problem solving. The study clarifies the importance of experiential learning abilities in problem solving. The findings can be utilised in training workers in universities and similar institutions about problem solving, problems in the Ugandan universities are said to be transmuting with no single solution therefore abstract conceptualisation skills based on reason and modelling can be developed to prepare the workers for the volatile/unstable global challenges. The study encourages decisions based on research, questioning and evidence and discourages decisions that are made from gut feelings. The study clearly highlights the fact that experience alone is not enough to guarantee that the worker will solve the problem at hand, neither is reflective observation alone enough. However in a work environment it is important that one develops all the four abilities and is able to apply the relevant skill whenever there is need for that skill.

A lot of research has been devoted to explaining the learning styles and relating them to problem solving, however a critical analysis of the styles bring out the deficiency in each style as far as problem solving is concerned. For example an individual with diverging style (CE and RO as dominant learning abilities) is best at viewing concrete situations, is interested in people, tend to be imaginative and emotional, have broad cultural interests, and prefer to work in groups (Kolb, 1985, 1999), however these people are said to be uncomfortable working alone yet it is necessary or inevitable to work alone in an organization sometimes. An individual with an assimilating style (AC and RO as dominant learning abilities), are best at understanding a wide range of information and putting it into concise, logical form however, are less focused on people and more interested in ideas and abstract concepts yet research has emphasized the importance of knowledge sharing.

An individual with a converging style (AC and AE as dominant learning abilities), are best at finding practical uses for ideas and theories, have the ability to solve problems and make decisions based on finding solutions to questions or problems. However, convergers prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues, it is however important to note that the work environment is dominated with social issues so an employee who neglects social issues will find challenges in solving workplace challenges. An individual with an

accommodating style (CE and AE as dominant learning abilities), have the ability to learn from primarily 'hands-on' experience, enjoy carrying out plans and involving themselves in new and challenging experiences, have tendency to act on 'gut' feelings rather than on logical analysis. In solving problems, relying on gut is not a recommended scientific practice. Therefore it is paramount that at the work place, learning abilities that enhance problem solving are acquired to fit diverse experiences in the work environment. A curriculum should be thought through based on Kolb Learning cycle and learning styles to come up with a model that will be effective in solving organisational problems.

### **Limitations**

The study was done on a limited population of administrators in the department of academic registrar, therefore it is not conclusive, there is need to replicate the study in different institutions other than the university setting and with a larger population.

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I always trust my feelings and intuition/instinct when doing my work (sixth sense)	1	2	3	4	5	6
I trust my instinct/intuition and feelings	1	2	3	4	5	6
I learn by feeling or being involved	1	2	3	4	5	6
I have strong reactions to circumstances	1	2	3	4	5	6
I am emotional	1	2	3	4	5	6