

Full Length Research Paper

Need for cognitive closure among vocational technical student teachers in some Nigerian universities

Benedict lorzer Labe

Department of Vocational and Technical Education, Benue State University P. M. B. 102119, Makurdi, Nigeria.

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This article presents survey results on the dispositional need for cognitive closure among student teachers in some Nigerian universities. The study used a cross-sectional descriptive design to collect data from 123 purposively random sampled students from three universities in Northern Nigeria who enrolled vocational technical teacher training programs. The Need for Closure Scale (NFC) was used to assess the student teachers' need for cognitive closure and its five factors (preference for order and structure, emotional discomfort associated with ambiguity, impatience and impulsivity with regard to decision making, desire for security and predictability and closed-mindedness). Results of data analyses indicated that, the need for cognitive closure score of participants in this study ranged from a low of 83 to a high of 180 with an overall mean of 129.01, and a standard deviation of 21.085. The student teachers who responded in this study also scored highly on the NFCC sub-scales. The implications of these findings are also discussed.

Key words: Need for closure, information seeking behaviour, student teachers.

INTRODUCTION

Regardless of the subject domain, education aims to develop the learner's critical and reflective thinking (Debacker and Crowson, 2009). As a matter of fact, in vocational and technical education or any other field, where problem solving education is considered as the central focus (Wu et al., 1996; International Technology Education Association (ITEA), 2000; Jonassen, 2010; Koch and Sanders, 2011), the entire curricular experience is targeted at encouraging critical and analytical thinking in students.

Considering the extraordinary access to information that is becoming increasingly available in today's world, Debacker and Crowson (2009) think that some learners may actually be finding the prospect of critically sifting

through multiple sources of information on a given topic confusing and problematic. Consequently, Debacker and Crowson (2009) reminds that educational systems play a significant role in providing "learners with the information, skills, and dispositions needed to engage in reflective and critical thought".

Asking questions and teasing out relevant information is the most important tool in the problem solving toolbox. Like in any process leading to the formation of conclusions, the problem solver often has to generate multiple hypotheses to account for what is known and then choose among those hypotheses on the basis of additional information (Kruglanski and Weber, 1994; Jonassen, 2010). In most problem situations, when we

E-mail: blabe@bsum.edu.ng.

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jump to conclusion concerning the problem state, specific cause and/or parameters then spontaneously proceed to solutions, we often times, sooner than later, find that the same problem recurs.

However, informal observations of many students in vocational and technical education indicate that they sometimes feel overwhelmed and stressed when they are confronted with problems that require asking questions and teasing out relevant information to solve. In such situations, most of the students seem anxious, frustrated, confused and resort to what Watson and Mason (2007) described as “doing whatever first comes to mind ... or diving into the first approach that comes to mind”. According to Lim (2006), those who jump at the first line of action that comes to mind do so without analyzing “the problem situation and without considering the relevance of the anticipated action to the problem situation”.

Doing the first thing that comes to mind to solve a problem without thinking upon it when confronted with the problem situation is an impulsive strategy (Bedel, 2015). Individuals who employ impulsive problem solving strategies disregard different factors and solutions concerning the problem. Individuals who employ reflective strategies on the other hand, reflect when making a decision. Such individuals weigh the consequences of each alternative and compare them against each other. A reflective problem solver tries to understand and review the situation and take into consideration all kind of information regarding the problem.

Whether or not people are impulsive rather than critical and reflective in the quest for solution to problem situations depend to some extent on a number of factors. DeBacker and Crowson (2009) inform that, aside from a certain level of cognitive ability, predispositions toward acquisition and processing of information (epistemic motives) “can influence one’s willingness to engage in critical and reflective thought”. Lai (2011) also informs that thinking critically involves both cognitive skill and dispositions. According to Lai (2011), component critical thinking skills include “analyzing arguments, making inferences using inductive or deductive reasoning, judging or evaluating and making decisions” (Abstract). Relevant dispositions to critical thinking as enumerated by Lai (2011) include attitudes or habits of the mind such as “open and fair-mindedness, inquisitiveness, flexibility, a propensity to seek reason, a desire to be well-informed, and a respect for and willingness to entertain diverse viewpoints”.

Among the important knowledge seeking/generation motivations that have received attention in the conceptual and research literature is the need for closure. Beliefs and preferences such as the *need for cognitive closure*, have been shown to influence individuals’ information seeking behaviour and judgement formation (Jost et al., 2003; Kruglanski and Fishman, 2009). According to Kruglanski and Fishman (2009), *need for cognitive*

closure has been defined as a desire for a definite answer to a question as opposed to uncertainty, confusion, or ambiguity. The need for closure is also said to predict a tendency toward rigid thinking and closed mindedness.

Kruglanski and Webster (1996) explained that non-specific need for closure motivates the individual to search for a definite answer in any situation, and is considered alongside with a tolerance of ambiguity or uncertainty. Before closure, a high NFCC will influence an individual to seek information, but when closure has been fulfilled the same high NFCC will effectively reduce the receptivity for information to avoid placing closure in jeopardy. Need for cognitive closure restricts the tendency of individuals to generate hypotheses when forming judgement (Kruglanski and Fishman, 2009).

Similarly, the extent to which a person is confident about their judgement will bias their subsequent behaviour in searching for further alternatives or data (Kruglanski, 2004). Specifically, Kruglanski and Fishman (2009) informs that, the need for cognitive closure brings up in the individual the tendency to very quickly seize on information that gives closure and to perpetuate (freeze) on closure once it has been attained by refusing to let go past knowledge and avoiding having to consider other incoming information.

An orientation towards a degree of ambiguity and uncertainty is seen as necessary if people are to explore new and potentially challenging ideas required in acts of technological problem solving. Frenkel-Brunswik (2013) noted that those who are intolerant of ambiguity have a “tendency to resort to black-and-white solutions, and characterised by rapid and overconfident judgement, often at the neglect of reality”. According to Carland et al. (1989), research revealed that people who best tolerate ambiguity are also the most innovative. In the school situation, DeBacker and Crowson (2009) suggested some interesting ways in which need for cognitive closure may influence the performance of educators. According to DeBacker and Crowson (2009), educators with a high dispositional need for nonspecific cognitive closure may treat knowledge and knowing in ways that reduce the likelihood of encountering uncertainty in the classroom. For instance, such instructors may oversimplify course content and favour assignments that are unlikely to promote critical thinking in learners (for example, those that require only memorization of facts and other superficial processing of information). DeBacker and Crowson (2009) also envision that the need for certainty may lead educators to adopt a dogmatic orientation toward academic content or classroom management, assuming that epistemic authority within the classroom should come from one source: themselves.

On this basis, DeBacker and Crowson (2009) suggested that teachers who are high in nonspecific need for cognitive closure are not likely to provide adequate levels of autonomy support within the classroom. Finally,

drawing upon findings in social psychology which indicate that individuals with high closure needs are more likely than others to engage in stereotyped thinking (Dijksterhuis et al., 1996; Kruglanski and Freund, 1983) and to rely on cognitive shortcuts as a basis for making social judgments (Kruglanski and Webster 1996), DeBacker and Crowson (2009) suggested that teachers who are high in closure needs may be more inclined to rely on stereotypes and non-individuating information when making important decisions about student progress and behaviour.

It may be particularly difficult for teachers experiencing need for closure to effectively adopt instructional approaches such as project-based, small group, or learner-centered learning. Project-based or small group learning are most suitable for developing technological problem solving competence within the vocational/technical education classroom. Effective project-based or small group learning is associated with a classroom atmosphere that can feel fairly chaotic as individuals or small groups of students work independently (and simultaneously) to formulate questions, discuss strategy and information, and cooperatively reach conclusions in regard to the open-ended tasks that are the foundation of such approaches.

Moreover, these types of learning require new inquiry and interpersonal skills from students that must be modelled and supported by the teacher. Teachers with a high need for closure may find this bustling atmosphere and these new instructional roles quite uncomfortable, preferring a more traditional classroom environment in which students, working quietly and alone, complete the same assignment in the same time frame and arrive at largely the same responses.

Webster and Kruglanski (1994) developed and validated an individual-difference measure of the need for cognitive closure called the Need for Closure Scale (NFCS). This 42-item scale comprises five factors or subscales, respectively described as preference for order and structure, emotional discomfort associated with ambiguity, impatience and impulsivity with regard to decision making, desire for security and predictability and closed-mindedness. Some illustrative items of this scale are "I think that having clear rules and order at work is essential for success," "I'd rather know bad news than stay in a state of uncertainty"; "I usually make important decisions quickly and confidently"; "I don't like to go into a situation without knowing what I can expect from it"; and "I do not usually consult many different opinions before forming my own view."

The research described in this study is motivated by the intent to determine the dispositional need for cognitive closure among student teachers. Exposing the student teachers' dispositional need for cognitive closure can help them become mindful in their learning and subsequent teaching of their students as well as steer them away from the culture of "doing whatever first comes to mind ... or diving into the first approach that

comes to mind" (Watson and Mason, 2007).

In other words, making the need for closure phenomenon explicit can help individuals both as teachers and students become aware of their tendency to jump to conclusions and solution on the basis of very little information as opposed to taking time to think and analyse a problem. This tendency does not equip them, both as individuals and citizens, to effectively identify and tackle most of the challenges that increasingly confront them daily as they strive deliberately to live, work, play and improve their circumstances as well as those of their society. The purpose of this study, therefore, was to assess the level of student technical teachers' need for cognitive closure.

Research question

What is the level of student technical teachers' need for cognitive closure?

METHODOLOGY

The study used a cross-sectional descriptive design. The respondents self-report of their thoughts was collected through a structured questionnaire and used to describe the student teachers' need for cognitive closure, to explore relationships and variations among these variables. Data for the study was collected from students in three universities in Northern Nigeria who were enrolled into vocational and technical teacher training programs. All the universities provided technical teacher education. Thus, a convenience sample of 123 students (248 male and 62 female) was used for the study. The students surveyed for this study were enrolled in either a four or five year Technical Teacher Training leading to award of a first degree. Data for the study were collected in this study using the Need for Closure Scale (NFC) (Kruglanski et al., 2013). The questionnaire contains 47 items. Five of the questionnaire items are lie detectors. Respondents are asked to indicate the degree to which they agree with the statement in each item on a 6-point scale (1 = strongly disagree and 6 = strongly agree). The total score is calculated by adding the scores of each statement, with the exception of the 5 lie items and other 16 items which are reversely scored. High values indicate a high need for closure (Todor, 2014).

In the present study, the reliability of NFCC scales calculated as a measure of its internal consistency and found to have a Cronbach's $\alpha = 0.728$. With the help of a faculty member at each of the universities, the students were assembled in one classroom and administered the questionnaire. They were not attending or waiting for a class session at the time. The respondents completed the NFCC questionnaire using paper-pencil method. Each respondent received a snack or cash token of one hundred naira for participating in the survey.

Analysis of data

In line with the purposes of this study, descriptive and inferential data analysis procedures were used. Data which provided answers to the research question were analysed using means and standard deviations. For purposes of interpretation of the NFCC and its factors, the respondents' score in the upper and lower quartiles were defined as high and low of the trait respectively.

FINDINGS

Data which addresses the Research Question is presented in Table 1. An analysis of those who completed the survey (N=123) shows that their dispositional need for cognitive closure score varies from a low of 83 to a high of 180 with an overall mean of 129.01, and standard deviation of 21.085.

The results further indicated that the participants with low need of closure (scores less than or equal to 114 at the NFCC Scale) were 31 while the participants with high need of closure (scores higher than or equal to 147) were 31. With respect to components of the need for cognitive closure, results of this study indicate that only 26.8% of the respondents indicated low preference for order (scores less than or equal to 32 on the preference for order scale), while only 26.8% indicated low level of closed-mindedness (scores less than or equal to 23 on the closed mindedness scale).

Additionally, 30% of the respondents indicated a high tolerance of ambiguity (scores higher than or equal to 39 on the tolerance of ambiguity scale), while 32.5% indicated a low preference for predictability (scores less than or equal to 26 on the preference for predictability scale).

Conclusions

This study is only an exploratory overview of the prevalence of the need for closure among student teachers enrolled in technical teacher training programmes in Nigeria. However, the implication of the findings of this study is that within the context of knowledge-formation processes the vocational and technical student teachers in the Nigerian universities who were surveyed are more likely to prefer order and structure, show an aversion to ambiguously defined tasks. They are also likely to falter in the face of uncertainty when confronted with problems.

In addition, the student teachers who participated in this study are most likely than not to be impatient and impulsive with regard to decision making, as well as, exhibit high levels of closed-mindedness. In other words, the students teachers studying for vocational and technical education in Nigerian universities who were respondents in this survey are likely to be limited in their problem solving performance in the sense that, when confronted with a problem they are likely and willing to generate as many hypotheses to account for what is known and then choose among those hypotheses on the basis of additional information (Kruglanski and Weber, 1994; Jonassen, 2010).

Furthermore, apart from other tendencies such as low receptivity to divergent views, and disdain for perspectives which differ from theirs, there is likelihood that the student teachers who were surveyed in this study

might characteristically tend to shun careful contemplation, and instead resort to “doing whatever first comes to mind ... or diving into the first approach that comes to mind” without, according to Lim (2006), analyzing “the problem situation and without considering the relevance of the anticipated action to the problem situation”. They might also be overly disposed to following rules as they prefer to have someone else impose understanding and clarity on every issue that they face.

There is also the possibility that the student teachers' need for cognitive closure might tend to curb their flexibility in information seeking and processing behaviour. If such is the situation, then it may influence their learning as students and subsequently their performance as teachers by discouraging both the continued generation of knowledge propositions relevant to a learning problem as well as the critical examination of those propositions” (Debacker and Crowson, 2009). A related consequence suggested by the findings of this study is that, student teachers in the Nigerian universities may end up in the classroom where they are practising as teachers who teach others on the basis of their (the teachers') wrong conclusions.

Because a heightened need for closure tendency could also limit the amount of information, the student teachers are willing to consider (Debacker and Crowson, 2009) and increase the likelihood that the information they are willing to consider is biased, inadequate, or incomplete, the results of this study suggests that student teachers in the Nigerian universities have the tendency to overgeneralize and even become stereotypical in their views. In fact, there is the danger that, as practising teachers, they may tend to, more often than not, underestimate the abilities of their students and resort to always employing teacher-focused teaching approaches without giving their students the opportunities to prove themselves.

As mentioned earlier, this study is only an exploratory overview of the prevalence of the need for closure among student teachers enrolled in technical teacher training programmes in Nigeria. However, it is hoped that this study will serve as a starting point for researchers interested in studying the effects of the need for cognitive closure within the classroom environment. Among other things, and based on the findings of this study, there is need to conduct research on the effects of need for cognitive closure within technological education classrooms to determine if and how the need for cognitive closure impacts the teachers'/students' behaviour in an actual teaching and learning situation.

In particular, there is need to find out whether or not a high need for closure limits the teachers and students potential for approaching encountered knowledge in an open-minded way (DeBacker and Crowson, 2008). Further studies are also needed to consider student teachers' perceived benefits and/or costs of closure in

Table 1. Respondents’ mean scores and standard deviations on the need for cognitive closure and its factors (N = 123).

Variable	Mean	Std. Dev.	Min	Max	Low		Moderate		High	
					Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Need for cognitive closure	129.01	21.085	83	180	31	25.2	61	49.6	31	25.2
Preference for order	40.55	10.628	20	60	33	26.8	56	54.4	34	27.6
Closed mindedness	26.86	5.348	14	37	33	26.8	59	48	31	25.2
Tolerance of ambiguity	31.65	9.71	9	53	31	25.2	55	44.8	37	30
Preference for predictability	29.95	6.964	10	47	40	32.5	57	46.4	26	21.1

learning to deal with educational and technological problem solving situations.

Conflict of Interests

The author have not declared any conflict of interests.

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