

Development of a Measurement Scale for Assessment of the University Students' Attitude towards Learning

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Abstract:

The study was carried out with a conviction for determination of attitudes of university students with cognitive and affective domains towards learning. The sphere of study level extended from negative to positive attitudes in learning with the two basic domains. The study aims to create an accurate scale that may quantify cognitive and affective attitudes of the university students towards learning. A rigorous measurement methodology was developed and followed to prepare the scale viz., questionnaire generation for survey, standardization of survey item with subject experts and collection of data etc. The reliability of the attitude scale was verified by Cronbach's Alpha test that showed a significant result with 81% reliability of the attitude scale.

Keywords: Cognitive, affective, attitude, learning, scale development, reliability

Introduction:

Education system is an institutionally organized, individually presented, informative student learning process of knowledge gathering. Higher education is a process of cognitive teaching-learning system, in which, a person acquires knowledge, activities, skills, practical experiences with self assessment and evaluation process (Muzik, 2004). This is the interactive process of knowledge transfer between two factors viz., the educators or facilitators and the recipients of the education or students. Combination of knowledge, cognition, abilities, habits and attitudes transforms the university student to a mature professional and makes him ready for competition.

Attitude is a stimulus dependant response and consists of three inter dependant components viz., cognitive, behavioural and affective components. As per the question of appearance, attitude possesses bipolar character and acts as physical or behavioral response to a specific stimulus. Like every psychological exposures, attitude is invisible in nature. So, the attitudes with overt responses cannot be measured properly (Albarracin *et al.*, 2005). According to Výrost & Slaměník (1997), attitudes of a person can be measured on the basis of outcomes derived from individual responses in respect to his action, verbal statements, opinions, feelings and disposition about the object. In individual life span with any social environment; attitudes, psychological responses, physiological gestures etc. are the measurable indicators of human behavior over stimulus and experiences. With its multidimensional appearance, attitude is a composite frame of three components viz., cognitive component, affective component and conative component (Nakonečný, 1997; Janoušek, 1988).

The cognitive component is the combination of knowledge, opinion, idea and vision to the attitude object. Attitudes may vary from expected to unexpected and favourable to unfavourable opinions of knowledge directed by cognitive attitude. Attitude may differ qualitative or quantitatively on the basis of cognitive component structure.

The affective component is the emotional experiences in a range from pleasant to unpleasant, preferred to non-preferred effects of attitude object. The affective components may have control over motivation and directivity.

University education is a typical pattern of formal higher study (Bednaříková, 2007). It is characterized by a direct, personal contact of the lecturer and the student under formal education system. This is the teaching process where, the teachers or mentors are fully involved in knowledge sharing with the students in a familiar environment. In order to fulfill the aims for educational success, the lecturer or supervisor must be dedicated to serve for professional, didactic and communication level of his performance. The curriculum for university degrees includes constructive syllabus of specific subjects, number of lessons, and particular topics of study with some extracurricular activities.

Learning is an internal process of acquiring for a student or a learner. A responsible student is one who accepts learning process with positive attitudes and behaviour. Students' faith and positivity in pure knowledge supports their motivation and efforts to shift their attitudes towards learning (Kara, 2010). Basically, learning depends on the individual performance and success of learning relies on the values of positive or negative attitudes towards learning.

Attitude study is a psychology dominated exposure of human in different environments and situations with temporal variation. Though the attitude is a human psychological exposure, it can be changed through modifications with cognition, motivation, behavioral and emotional variations (Petty and Cacioppo, 1981).

The current study aims to generate a quantitative measure scale on the basis of qualitative responses. The questionnaire furnishes the response of students' cognitive and affective attitudes towards learning in higher education system. Within this study, the researcher initiated to develop a new, simple, easy to comprehend, reliable and potentially workable questionnaire following the previous researches and traditional literature ready for survey.

Methodologies:

Research Design:

- a. Experimental Tools: A questionnaire was generated as the experimental tool for survey by screening of a pool of theoretical knowledge related to attitude study towards learning.
- b. Analytical Tools: Data generated by the sampling survey were analysed statistically and reliability study of the questionnaire was done by Cronbach's alpha correlation coefficient.
- c. Construction of questionnaire: A bunch of 35 questions was generated by the author, from which 20 questions were selected finally after screening and verification by the expert educationists. The 20 questions were enlisted under four subdivisions i.e., each of the subsections like Positive cognitive attitude towards learning, Negative cognitive attitude towards learning, Positive affective attitude towards learning and Negative affective attitude towards learning with five questions.
- d. Response scale: The Likert's five point rating scale was applied for quantification of responses with a variety from strongly agree, agree, partially agree, disagree and strongly disagree for positive responses with marks range 5 to 1 in descending order. In case of negative questions, the rating scale was inverted.
- e. Locale of the study: The locale of the study was S R B. Training College under The West Bengal University of Teachers' Training, Education Planning and Administration, District-Darjeeling, West Bengal.
- f. Sample size: For this study, 98 students of B.Ed. second semester was invited. Among them 48 students submitted incomplete answers and rest 50 students responded successfully and were selected for the study.
- g. Statistical treatment of data: For analysis of attitude levels toward learning, weighted mean among descriptive statistics was applied. Descriptive interpretation of responses are:
Statistical Range Descriptive Interpretation

- 4.21-5.00 - Strongly agree
- 3.41-4.20 - Agree
- 2.61-3.40 - Partially agree
- 1.81-2.60 - Disagree
- 1.00-1.80 - Strongly disagree

h. Reliability: The reliability of questionnaire was tested using Cronbach's alpha correlation coefficient.

- Internal consistency range
- Excellent – 0.9
- Good – 0.8 to 0.9
- Acceptable – 0.7 to 0.8
- Questionable – 0.6 to 0.7
- Poor – lower than 0.6

i. Statement of the problem: The study wants to find out the level of purity and reliability of the newly prepared questionnaire in the study with sampling size of 50 university level students. The study aims to explore the applicability of the questionnaire to maintain relationship between cognitive and affective attitudes of higher education students with learning. The students responded the questions during study by the following justified lines:

1. The cognitive attitude of students toward learning in terms of
 - a. Positive cognition
 - b. Negative cognition
2. The affective attitude of students toward learning in terms of:
 - a. Positive affective
 - b. Negative affective

j. Assumptions: The study assumes that the questionnaire developed for survey of university students' attitude toward learning will gain workability and reliability and may correlate the students learning attitudes with other factors. The study also assumes that the questionnaire is valid and the answers of students can quantify for attitude measurement.

Result and discussion:

In the study, the terminal version of the questionnaire consists of 20 questions with four subsections. Response options are of five types, from 1 to 5, where "1 = maximum disagreement" and "5 = maximum agreement. The questionnaire was developed in Likerts' five point attitude scale and was administered before a group of university students with a sample size N= 50 to examine the reliability and applicability of the assessment tool.

Total obtained score of the students were in a range from 54 to 95 with an average score of 77.08 (table 1). Among the four attitude sections, questions with positive sense give highest numbers to the students for both cognitive and affective scales toward learning. Mean value of the total score in each dimension was higher in case of positive attitudes (table 1, figure 1.).

As the students selected for the study were from higher education department with professional training, average marks obtained by them were more than 70% and the lower limit of the score was above 50% (figure 1). Among 50 students, the highest scorer obtained the marks 95 out of 100 (table 1). So, it can be said that, selection of university students with professional course was appropriate and the students showed good results as they learn more in teachers training course. In comparison to general degree students, the B. Ed and M. Ed students go through a vast knowledge about cognition, knowledge, emotion, behavior, attitude, teaching, learning *etc.* So, the B. Ed students will be completely at par for this attitude study. They may response the statements stated in the questionnaire by understanding the inner meaning and feature of the questions.

The attitudes that may either be positive or negative, must have influence over learning. Learning is a lifelong process of acquiring knowledge and developing skills for a student. This cannot be confined in

standard, degree, institution and curriculum. A person, either able or unable to acquire knowledge may also develop positive attitudes toward learning in any stages of life. Attitude is the response of a student or human being that may be behavioural in terms of exposure, or as a mental activity that must increase its positivity to learning in favourable situation.

From the reliability study it can be said that there was a range of variance from 0.659 to 2.526 within the 50 ideal samples. Calculated value of the Cronbach’s alpha coefficient was 0.811 (Table 2) that lies within the table value from 0.8 to 0.9 as ‘good’ in reliability test.

Table 1: Summary of students’ responses of attitudes toward learning

Descriptive statistics	Summary of students' response attitudes toward learning				
	Positive cognitive attitude	Negative cognitive attitude	Positive affective attitude	Negative affective attitude	Total responses
Max	25	24	25	25	95
Min	15	10	12	9	54
Average	21.7	16.56	19.44	17.94	77.08

Figure 1: Summary of students’ response

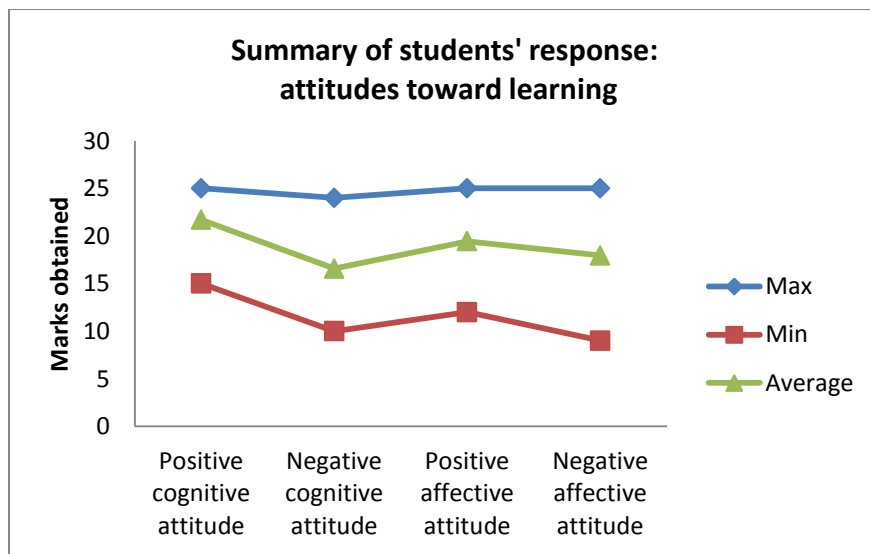


Table 2: Result of reliability study

Number of Samples or students (N)	Number of questions (K)	Variance of samples (range) σ^2	Cronbach’s alpha coefficient (α)	Reliability
50	20	0.659 – 2.526	0.811	Good (0.8 to 0.9)

The questionnaire was developed and explained step-by-step and was analyzed by a sample study. The study has established a relationship within higher education students’ attitudes and their learning as a whole. In case of item pool development about 35 questions was prepared as statement for response by the authors inspired by Rees *et al.* (2002). Among these questions, 20 questioned were selected finally

and were applied as statements of the questionnaire. Five items for each division of both cognitive and affective attitudes with positive to negative range was set towards learning according to de Jong and den Hartog (2010). The rest items were prepared by literature study (Fisher, 2014).

The initial pool of items was 35. All the selected items were assessed on a 1 = strongly disagree, to 5 = strongly agree response scale. In 5 point Likert-type scales, a mid-point of value have been shown (Garland, 1991). Attitude scales In Likarts’ five point frame is a measuring device that readily quantify the quality of psychological and emotional parameters like thoughts, believes, perception, affection, anxiety etc. It is a measurement scale by which the respondents express their feelings with a degree of agreement or disagreement.

Descriptive statistics of marks obtained as response scores by the students in attitude study towards learning showed that majority of responses in case of positive cognitive and positive affective attitudes were in the form of strongly agree to agree responses. In case of negative exposure for cognitive and affective attitudes, the responses were strongly disagreeing to disagree (table 3& 4).

The result showed that in the cognitive level of attitude study, majority of the students responded in terms of strongly agree (SA) and agree (A) for the positive statements (table 3). In case of negative cognitive level, all the students responded the statements as strongly disagree (SD) and obtained average mean of 4.46 in inverted Likert’s scale for negativity (table 3).

Table 3: Student’s Attitude toward learning as to Cognitive Component

Cognitive attitude toward learning		Mean	DR
A. Positive cognitive attitude			
1.	University students achieve the eligibility to learn higher level of education	3.55	A
2.	Learning can modify knowledge and upgrade quality of life	3.65	A
3.	Learning can develop knowledge and skill of students in any stream	3.45	A
4.	Learning should be mandatory for all students	4.55	SA
5.	Learning is necessary for a student for carrier development and achievement of success in future	4.4	SA
	Composit mean	3.92	A
B. Negative cognitive attitude (Inverted legend)			
6.	Learning in improper way may cause threat in student life	4.5	SD
7.	Learning may not favour in every step of life	4.25	SD
8.	Learning may not support for carrier development	4.45	SD
9.	A little learning may cause harm to the student carrier	4.5	SD
10.	Students may live life without proper learning also	4.6	SD
	Composit mean	4.46	SD

Table 4: Student’s Attitude toward learning as to Affective Component

Affective attitude toward learning		Mean	DR
A. Positive affective attitude			
1.	Learning of education in proper methodology is very interesting	4.5	SA
2.	Learning motivates the students to achieve their goals	3.3	PA
3.	Learning may develop quest for students	3.4	PA
4.	Learning may purify soul of human being	4.7	A
5.	Learning increases positivity of mind	3.2	PA
	Composit mean	3.82	A
B. Negative affective attitude (Inverted legend)			
6.	Learning may be a lengthy process	2.9	PA
7.	Lacuna in learning may cause depression	4.7	SD
8.	Erroneous transfer of learning cause dissatisfaction of students	3.1	PA
9.	Learning may imbalance student’s ego	3.05	PA
10.	Learning depends on knowledge flexibility	2.7	PA
	Composit mean	3.29	PA

Legend: 4.21-5.00 Strongly agree (SA), 3.41-4.20 Agree (A), 2.61-3.40 Partially agree (PA), 1.81-2.60 Disagree (DA), 1.00-1.80 Strongly disagree (SD).

In case of affective level of attitude study, the picture is slightly deviated. As it is known that, the affective domain is psychologically more active and emotion depended, the response showed variations. A blend of different categories of responses was obtained in this level against the rigid responses like strongly agree or disagree (table).

Random selection mechanism was applied for student survey for assessing the potentiality of the questionnaire (DeVellis, 2012). The questionnaire divided into four components was developed and used for sampling to assess attitudes of university students toward learning (Conway and Huffcutt, 2003).

The purpose of the study was to generate a quantitative scale that can measure the student attitudes toward learning accurately. Twenty item measures of attitude was prepared that can support the university students to develop positive thoughts towards learning according to the Theory of Planned Behavior (Conway and Huffcutt, 2003). Furthermore, although our aim was to generate student attitudes for learning, the items can be screened from broader sphere of thoughts and theories. The scale was developed with a wish to maximize its reliability and an extensive review of the literature and further study of validity is required in a large population survey in future.

The limitation of our study was that we sampled B. Ed students from one university only for this study by survey method. Even though it can be argued that students’ attitudes can be assessed in different way also (Conway, 2002).

Though there were some limitations, our findings will add some new information over the traditional literature about attitude scale. We have gone through different well-known theories of attitude development. Our study was a procedural activity of designing survey tool, and evaluating its ability to known as a reliable tool in its application. In future, the researchers may incorporate validity evidence for attitude study toward learning to extend our findings as it is an endless process (Douglas and Purzer

2015). The research work will fulfill the objective of finding out the attitudes of university students after completion of graduation toward learning to gain societal establishment in their professional life.

Conclusion:

This study explores the way of innovation by which a new reliable questionnaire of attitude scale can be generated and explained in a simple and elaborative way. The study expressed step wise progress of the questionnaire and assessment of reliability and applicability of the questionnaire for pursuance of future research work. An attitude scale may be an easily administrable and cost-effective tool for the screening of primary data in vast survey research. In spite of its popularity, attitude scale is unable to measure intuitions, insights and other qualitative attributes properly. In this case, a detailed study with proper stratification of qualitative statements in a large sample size will purify the responses of the individuals.

From the study it can be concluded that the university students pursuing B. Ed degree are the responsible participants to comprehend and realize the statements of the questionnaire. The questionnaire was prepared with proper literature survey and was enriched with experts' opinion. The questionnaire proved it's workability in a scientific manner. Responses of the students in the study helped to interpret reliability of the questionnaire by Cronbach's alpha correlation. The result revealed that the questionnaire was 'good' and 81% reliable as a survey tool. In case of positive cognitive attitude, the students agreed strongly and for negative cognitive attitude, the responses were strongly negative. This result supports the appearance and features of the statements fitted with Likert's five point rating scale. As the affective level of attitude is emotion dependent, the students responded in a flexible range rather than rigidity rendering variety in responses.

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