Original Research Article

Construction of Attitude Scale towards Choice Based Credit System (CBCS)

Abstract

The academic reform necessarily includes changes in admission procedures in various courses, modification in assessment and examination methods. Now education evaluation system has entered into semester based system to introduce Choice Based credit System known as well as CBCS. This study aims to explore the quality of each item of attitude related to choice based credit system (CBCS). Purpose sampling technique has been used for the collection of relevant data in this study. A self-made structured questionnaire was drafted for this study to a group of undergraduate students. After review of previous paper and article, thirty two (32) items has been selected under the different type dimensions i.e., Curriculum and Subject Selection, Evaluation and Feedback, Students Interest, Skill and Development, and Time, in the item pool for this attitude scale. Likert summative five (5) point rating scale was used in this scale/tool. After item analysis, it was found that in the attitude scale six (6) items were eliminated from this tool/scale on the basis on Discrimination Index (DI). The final form of attitude scale twenty six (26) items respectively consider for this scale. Pearson's product-moment coefficient (r) was used to determine the reliability of the test items. The coefficient of correlation of two tests of attitude scale were found as0.89 i.e. highly positive correlation. Finally, every effective item was selected for this questionnaire that can be assessing students' attitude towards choice based credit system successfully. That is significantly reliable.

***Keywords*: -** Attitude, Choice Based Credit System (CBCS), Tool Construction,

1. Introduction

"In every field of society education plays a significant role in building a good nation. There are numerous institutions playing this role in our country. Now they have entered into semester based system to introduce Choice Based credit System known as well as CBCS"

(Das and et al., 2018). “The 11th plan recognized the need to introduce the academic reform in the university and college education system. The academic reform necessarily includes changes in admission procedures in various courses, modification in assessment and examination methods switch over from annual to semester system, acceptance of grade and credit system, CBCS, teachers’ assessment and other related reforms” (Deuri, 2015).

“Choice Based Credit System is a proven, advanced mode of learning in higher education which facilitates a student to have some freedom in selecting his/her own choice in the curriculum for completing any degree program” (Biswas, 2018). “It provides full opportunity to the learners to pursue courses as per their choice. It is a system of evaluation which offers maximum opportunities and avenues to the learners to learn core subjects with the provision of additional soft courses for their holistic development” (Hasan and Parvez, 2015).

The main purpose behind adopting the CBCS was to bring uniformity in curriculum and evaluation system at higher education level among all universities and colleges as the nature of higher education in India was so complex (Mahakur , et al., 2019). The CBCS is introduced to bring about changes in higher education system in India with reference to learning opportunities, the ability to match learners’ needs in institutions, as well as the desirability of learners’ enrolment, the development of quality education and excellence, the great flexibility of completing programs effectively and education programs (Kelker and Ravishankar, 2014). Higher education in India is undergoing significant changes from the traditional education system of teacher centric approach to student centred approach (Chauhan). Thus, CBCS is essential for higher education as this system increases the seriousness among the students, as they prefer to learn the subjects of their choice (Katoch, 2017). Present education evaluation systems make a broad change that is called choice based credit system. So, it is very important to know students’ view point or attitude towards choice based credit system. Therefore, researcher has tried to prepare or develop a tool/scale in this study that can assess students’ attitude towards choice based credit system.

2. Objectives

This study aims to explore the quality of each item of attitude related to choice based credit system (CBCS). So we can select the poor items, and modify or reject those items from final scale.

3. Research Question

The present study focused on some research question. This research questions are -

i. What are the values of item difficulty and discrimination index of the attitude scale towards CBCS?
ii. How many numbers of items are considered/selected and rejected for final scale based on item difficulty and discrimination index?
iii. Is the test reliable?

4. Methodology

4.1. Tool Construction:

Tool construction is an essential part of research. The researcher prepared and standardised a scale/tool to assess the attitude of undergraduate students toward choice based credit system (CBCS) in this present study.

4.2. Draft Items of Attitude Scale towards CBCS:

The researcher has gone through different related journal and paper for preparation of item pool of attitude scale towards choice based credit system (CBCS). After review of previous paper and article, thirty two (32) items have been selected under the different type dimension viz. Curriculum and Subject Selection, Evaluation and Feedback, Students Interest, Skill and Development, Time, in the item pool for this attitude scale. After consulting field expert, resources persons and item analysis twenty six (26) were finally selected for the final questionnaire.

4.3. Scoring Technique for Attitude Scale:

To prepare the attitude items/statements, at first researcher gathered various information's from various sources. After this both favourable and unfavourable attitude items were formed with the help of expert in this field. In the attitude scale there are five (5) alternative options based on Likert summative five (5) point rating scale (Yavuz, 2005). Those alternative options are strongly agreed, partial agreed, neutral, partial disagreed, strongly disagreed. Score system of this scale is '5', '4', '3', '2', and '1' for favourable item and '1', '2', '3', '4', and '5' for unfavourable items (Likert, 2017).

4.4. Design:

Purpose sampling technique has been used for the collection of relevant data in this study. It is a kind of non-probability sampling technique (Teddlie and Yu, 20007).

4.5. Participant:

A structured questionnaire was drafted for this study to a group of undergraduate students of Paschim Medinipur district, West Bengal (wyk, 2006). The researcher prepared attitude scale on sixty (60) undergraduates students calculated of discrimination index of the each items and sixty (60) undergraduate students are required for reliability test of this tool.

4.6. Data Collection:

After preparing the tool, the research collected the data for item analysis from sixty (60) different undergraduate students. After item analysis, the researcher collected data from sixty (60) different undergraduate students for test and retest. This data has been collected during twenty (20) days. All data are collected by researcher himself. Participants were given the questionnaire with instruction to thoroughly read it before in putting their responses in the boxes following each statement (Maity and Sikdar, 2023).

4.7. Data Analysis:

After the data collection researcher did the scoring the items. After scoring the researcher has calculated the discriminate index value of each item of this tool. Researcher identified the problematic items and effective items based on the discriminate index value of each item (Rajashekar, 2016). Then every effective item is selected for final scale and every problematic item is eliminated form this scale. Discriminate index have been calculated by the following formula-

Discriminate Index:-

$$DI = \frac{RU - RL}{\frac{T}{2}}$$

Where, DI = Discriminate Index

RU= Number of correct responses form the upper group

RL = Number of correct responses form the lower group

T = Total number of responses from both group

The test- retest method is used for reliability test. The Pearson's product-moment coefficient (r) was used to determine the reliability of the test items.

5. Result

According to research question - i: The values of discrimination index of the attitude scale regarding CBCS is showed the below table-

Table-1: Item analysis of attitude scale of choice based credit system (CBCS)

Item No.		DI	Item No.		DI
Before	**After**		**Before**	**After**	
A1	A1	0.36	A17	A112	0.72
A2	A2	0.27	A18*	-	0.09
A3	A3	0.27	A19	A13	0.54
A4	A4	0.54	A20	A14	0.63
A5*	-	0.18	A21	A15	0.72
A6	-	0.41	A22	A16	0.27
A7	A5	0.36	A23	A17	0.27
A8	A6	0.27	A24	A18	0.45
A9*	-	0.09	A25	A19	0.63
A10*	-	0.09	A26	-	0.36
A11	-	0.27	A27	A20	0.27
A12	A7	0.36	A28*	-	0.09
A13	A8	0.45	A29	A21	0.36
A14	A9	0.56	A30*	-	0.18
A15	A10	0.45	A31	A22	0.45
A16	A11	0.81	A32	-	0.36

Note: * Item Rejected

According to research question -ii: How many numbers of items are considered/selected and rejected for final scale based on item difficulty and discrimination index?

Table- 2: Distribution of items on the basis of discrimination index

DI-value	Total Item
	Attitude
Excellent (D>40)	13
Good (0.30-0.39)	06
Fair (0.19-0.29)	07
Poor (D<0.19)	06

General rule to interpret the discrimination indices (Ebel and Frrisbie, 1991)

According to the criteria of the discriminating index (Table-2), the result of the attitude test indicates that six(6) items failed to distinguish between students of different abilities , seven (7) items were fair which needs to be reviewed, six(6) items were good and the function of the thirteen (13) items were excellent. These “poor” items were A5, A9, A10, A18, A28 and A30.

Selection of item for final scale:

After item analysis, it were found that in the attitude scale six (6) items were eliminated from this tool/scale on the basis on discriminating index (DI). The final form of attitude scale twenty six (26) items respectively consider for this scale.

Table-3 Distribution of the items after analysis among different dimension of attitude scale of CBCS

Sl. No.	Dimension	Item's No.(After analysis)		Total No. of Items
		Favourable	*Unfavourable*	
01.	Curriculum and Subject Selection	1,2,4,20	3,6	6
02.	Evaluation and Feedback	7,10,11	9, 12,13	6
03.	Students Interest	14,16,22,	15, 17	5
04.	Skill and Development	5,18,21	8, 19	5
05.	Time	23,24	25, 26	4
Total		**15**	**11**	**26**

According to research question -iii: Is the test reliable?

After the determination of the p-value and discriminate index of the test, the researcher conducted a test-retest on sixty (60) undergraduate students from different college. Researcher used test –retest method for reliability test of this tool. This method was used to determine the correlation between the two tests. Pearson's product-moment coefficient (r) was used to determine the reliability of the test items. The coefficient of correlation of two tests of attitude scale was found as 0.89 i.e. highly positive correlation is present between two tests (Putri, et al. 2019; Maity, et al. 2022). Therefore this tool/scale is reliable.

6. Discussion

The refinement of the attitude test was conducted using the discrimination index (DI) to ensure that only the most effective items were included in the final questionnaire. The DI helps identify how well an item distinguishes between individuals with high and low levels of the attitude being measured. In this study, six items (A5, A9, A10, A18, A28, and A30) were found to have poor discrimination indices and were subsequently excluded from the final questionnaire to enhance the test's overall quality. Among the remaining items, seven (A2, A3, A8, A11, A16, A17, and A20) showed fair discrimination indices. Although these items did not demonstrate as strong discriminatory power as others, their inclusion was deemed appropriate to provide a comprehensive measure of the attitude. Additionally, six items (A1, A7, A12, A26, A29, and A32) exhibited good discrimination indices, indicating their ability to effectively differentiate between individuals with varying levels of the measured attitude, thus justifying their inclusion in the final version of the questionnaire. The most significant

refinement came from the identification of thirteen items that demonstrated excellent discrimination index values. These items were strongly retained for the final questionnaire as they showed a high capacity for distinguishing individuals based on their attitude levels. This careful selection process led to a total of 26 items being included in the final attitude scale, ensuring a balanced representation of items across varying levels of discriminative power. The process of item selection based on the discrimination index not only helped in eliminating the six least effective items but also enhanced the overall reliability and validity of the attitude scale. To further confirm the reliability, the coefficient of correlation between two tests using the final attitude scale was calculated and found to be 0.89. This indicates a high positive correlation, suggesting strong consistency between the two tests and affirming the scale's reliability as a measurement tool (Putri et al., 2019). Thus, the final attitude scale was refined to include only those items that exhibited fair to excellent discrimination indices, which enhances its precision in measuring the targeted attitude. The scale's high reliability coefficient reinforces its effectiveness, making it a robust tool for assessing attitudes in the target population. The thorough process of evaluation and refinement ensures that the final scale is both reliable and valid for its intended purpose.

7. Conclusion

To conclude, this study shows how to prepare and develop the tool/scale to assess attitude of students towards choice based credit system. This tool/scale has been standardized carefully by the researcher. Finally, every effective item was selected in this tool/scale that can be assessing students' attitude towards choice based credit system successfully. This questionnaire has good item and significantly reliability.

8. Implication

The construction of the Attitude Scale towards the Choice Based Credit System (CBCS) has significant implications for educational research and policy. It provides a reliable tool for assessing students' and educators' attitudes towards CBCS, enabling stakeholders to understand its acceptance and perceived benefits or drawbacks. Insights from the scale can inform curriculum development, guide policy adjustments, and enhance the implementation of CBCS to better meet students' needs. Additionally, it can help identify areas of resistance or support, facilitating targeted interventions to improve the effectiveness and adoption of the CBCS in higher education institutions.

Disclaimer (Artificial intelligence)

Option 2:

Yes, Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts.

Details of the AI usage are given below:

1. ChatGPT (GPT-4), OpenAI, Version: March 2024. Assisted in drafting the rephrasing technical language for clarity.

2. Grammarly AI Writing Assistant. Suggested grammar corrections and improved sentence flow in the discussion section.

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