Research Paper

Development and standardization of moral intelligence scale

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ABSTRACT

The purpose of this study was to construct, develop and standardization to measure moral intelligence scale (MIS) of pupil-teachers. Investigator outlined the dimensions of moral intelligence with a thorough reading of the literature and after analyzing the content framed 100 items related to the determined dimensions. The prepared 100 items were revised and edited carefully and then given to the experts for their valuable suggestions and corrections to ensure its quality. Thus the content validity of the tool was established. After first try out and seeking the opinion of the experts some of the items were reframed and 11 items were deleted. Item analysis was done by calculating the Difficulty index level and Discrimination power for each of the 89 items of the pilot study. Based on the results of statistical analysis 27 items were deleted and 62 items were retained and those items were selected for the final study. Reliability of the questionnaire was determined by Split half method and that came out to be 0.74 that determines MIS is a highly reliable tool. The predictive and concurrent validity were 0.70 and 0.77.

Keywords: *Moral, Intelligence, Difficulty index and Discrimination power*

According to Carter V. Good (1973) "the moral concept is an idea or mental pattern that may be used as a criterion for discriminating between right and wrong". Moral Intelligence is the capacity to understand right from wrong; it means to have strong ethical convictions and to act on them so that one behaves in the right and honorable way (Borba, 2001). This wonderful attitude encompasses the following as

1. Ability to recognize someone's pain and to stop oneself from acting on cruel intentions.
2. To control one's impulses and delay gratifications
3. To listen openly to all sides before judging
4. To accept and appreciate difference
5. To decipher unethical choices
6. to empathize
7. To stand up against injustice
8. To treat other with compassion and respect.

Moral Intelligence involves a combination of knowledge, desire and will power. It involves the way people think, feel and act. Teachers must deliberately teach their students critical

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moral IQ skills such as resolving conflicts, empathizing, managing anger, negotiating fairly, using self-control etc. Teaching moral virtues and habits that make-up strong moral IQ is the best assurance teachers give students to win moral lives.

Education is a moral endeavor, and it is only through the active participation of reflective teachers that meaningful change in education occurs. Teachers are to be the models of moral behavior, exemplifying the virtues they seek to inspire in their students. To do so, teachers need knowledge and competence to foster morality in others. Teachers play a vital role in the overall development of the students. Not only are they responsible for imparting academic knowledge, but also are responsible for inculcating the right values and principles in their students. Therefore it is very important to have professionally qualified teachers to ensure the right development of students.

REVIEW OF RELATED LITERATURE

Kruger (2012) in a study on "Moral intelligence: the construct and key correlates" examines the construct moral intelligence as part of the multiple intelligence theory, understanding the moral decision making as part of moral intelligence. The study was conducted in South African financial institutions with a sample size of 466. The moral judgment test was preferred as measure for moral reasoning. Results revealed the support for Kohlberg's stages of moral development. There was evidence that the use of post conventional strategies of moral reasoning increased moral competence.

Bhagyalakshmy (2014) conducted a study on "construction & standardization of moral intelligence scale". The study aimed at developing test for the student teachers at primary level for the objective measurement of moral intelligence. seventy statements were included in the draft form of the moral intelligence scale included seven dimensions of human behavior, namely empathy, conscience, self-control, respect, kindness, tolerance & fairness. Reliability coefficient for the whole test was found to be 0.81. Content validity was established by consultation with experts.

Statement of the Problem

The problem under study was "the development and standardization of moral intelligence scale (MIS) for pupil-teachers".

Objective of the Study

Following were the main objectives of the study.
1. Selection of moral intelligence scale for pupil teachers.
2. Calculation the Discrimination Index of the test items.
3. Determining the difficulty level of MIS test items.
4. Determining the grade norms of sample for different variables

Delimitation of the Study

1. The study was delimited only to the pupil-teachers of various teacher training institutes (TTIs) of Kumaun Division.
2. The study was limited only to 150 pupil-teachers from government and self-financed colleges.
3. The study was limited to academic year 2017-18 only.

METHODOLOGY

Population

In the present study all the pupil-teachers of B.Ed colleges and DIETs of Kumaun region of Uttrakhand in the academic session 2017-18 were the population for the present study.

Sample

For the present study stratified random sampling technique was adopted for the selection of 150 samples from Almora and Nanital Districts of kumaun region.

Scale construction and item writing

Before constructing the blueprint, the tables were designed indicating weightage to objectives, weightage to content and weightage to type of questions. Keeping the objectives of the study in mind the investigator at first had a complete reading of the moral intelligence through text books, magazines, journals, newspapers, magazines and reference books, electronic media etc. On the basis of these information gathered from the above mention the researcher selected the following five dimensions for the self-developed tool namely as follows:-

1. Integrity
2. Respect
3. Kindness
4. Conscience
5. Self-control

The questionnaire had been given to subject experts to find out whether the data would satisfy their needs of the study. As the scale was interdisciplinary in nature therefore fifteen judges had been chosen from all related fields. Among them six pedagogists were from the faculty of Education, Kumaon university campus Almora, five Research scholars in Education Department, and two from the psychology department and two principals of intermediate colleges of Almora town. The experts and judges were requested to examine the nature of all the items mentioned in the list and give their opinion regarding suitability of the items. Only those items were retained about which the judges were unanimous for their retention. On the basis of the preliminary try out and experts' opinion some items that were dual answered and vague had been reframed and 11 items had been deleted out of 100 and 89 items were included for item analysis. After reframing and deleting the items rest of the items were arranged and categorized according to the level of difficulty that is from easy to hard. All the items had been framed in the form of a questionnaire. All the items had been set in a two point scale system and for each item the respondents were asked to give their response either "Yes" or "No", out of which only one is correct and it is given the score value of 1. Thus the preliminary tool was drafted. The Positive and negativeness of the items was also taken into due to concern while those were being framed. All the items had been framed in the form of questionnaire. Thus the following numbers of statements were selected:-

Table 1: Showing Dimensions included in the questionnaire

S. No.	Dimensions	No of items
1	Integrity	27
2	Respect	15
3	Kindness	18
4	Conscience	15
5	Self- control	14
Total	**05**	**89**

These 89 items were made into a booklet with necessary instructions. These items were administered to 150 pupil-teachers of Almora and Nanital district. The response of the respondent in yes and No form were collected. Response 'yes for every positively stated item and 'No' for every negatively stated item was awarded 1 mark. In the same way response in 'no' for positively stated item and in 'yes' for negatively stated item was awarded 0 mark.

Administration of the Tool

Simple and clear instructions were printed on the cover page of the test booklet. Although the test virtually self-administering. It is always important to establish good 'rapport' with the examinees, whether tested individually or in groups. It was ensured that no item of the questionnaire could remain non-responded before the form was collected. Preliminary tool of Moral Intelligence Scale (MES) were distributed and tested to the 150 pupil-teachers from 7 colleges and institutes of different areas in Almora, Nanital district and data was collected. Tests were marked using a standard procedure in which score of +1 was given for each item passed. Thus total 89 marks were assigned for each test. Each question has two answers from which one must be chosen. Teachers were instructed to choose only one opinion from provided list of opinions.

Data Analysis and Results

After collecting the data, scoring procedure was simple. 1 mark was awarded to the right answer and 0 mark to wrong answer. The data obtained from 150 pupil-teachers were analyzed with the help of statistical techniques. Although there were several different process of item analysis giving indices of quality, traditionally one have been used, discrimination index. Data analyses were as follows:

Item Analysis

One of the important steps in the standardization of any tool is an items analysis. It is a statistical technique used for selecting and rejecting the items in a scale on the basis of the obtained values. It is done primarily to eliminate inconsistency of the items. . Then item analysis was computed to determine as how well the scale items differentiate between the criterion groups based on the total scores. The individual's scores for entire 150 samples were found out. In the present study Item analyses were calculated with the help of discriminative power.

Discrimination Power (D.P.)

The discrimination power of an item indicates the measure of the extent to which an item discriminates between subjects do well on the overall test and those who do not well on the overall test. The discrimination index was determined by the item validity. Item validity was calculated with the help of point bi-serial correlation method. Point bi-serial correlation 'rpbi' value has been calculated for all the items. Those items which were found significant of .05 levels and had positive correlation were selected and those which were found insignificant of .05 levels and had negative correction were rejected.

The following formula was used (Edward and 1957) to calculate the 'rpbi' value of each statement:

$$\text{rpbi} = \left(\frac{\text{Mp - Mq}}{\text{st}} \right) \sqrt{pq}$$

rpbi = Point biserial correlation coefficient
Mp   =   Whole test mean for student answering item correctly
Mq   =   Whole test mean for student answering item incorrectly
st   =   Standard deviation for whole test.

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p = Proportion of students answering correctly
q = Proportion of students answering incorrectly

Thus the Point bi-serial correlation 'rpbi' values for all the 89 statements were calculated.

Table 2: Showing Item Analysis Results for Discrimination Index

Item no	'rpbi' value	Level of sig.	Remarks	Item no.	'rpbi' value	Level of sig.	Remarks
1.	0.182366	.05	Selected	2.	0.02583	n.s	Rejected
3.	0.236213	.01	Selected	4.	0.23697	.01	Selected
5.	0.213621	.01	Selected	6.	0.23674	.01	Selected
7.	0.175236	.05	Selected	8.	0.10236	n.s	Rejected
9.	0.192386	.05	Selected	10.	0.25374	.01	Selected
11.	0.172361	.05	Selected	12.	0.36214	.01	Selected
13.	0.174236	.05	Selected	14.	0.19725	.05	Selected
15.	0.182356	.05	Selected	16.	0.23624	.01	Selected
17.	0.352314	.01	Selected	18.	0.312675	.01	Selected
19.	0.236143	.01	Selected	20.	0.107231	n.s	Rejected
21.	0.104236	n.s	Rejected	22.	0.19523	.05	Selected
23.	0.175413	.05	Selected	24.	0.02693	n.s	Rejected
25.	-0.012356	n.s	Rejected	26.	0.15936	.05	Selected
27.	0.023614	n.s	Rejected	28.	-0.07251	n.s	Rejected
29.	0.172564	.05	Selected	30.	0.19361	.05	Selected
31.	0.342361	.01	Selected	32.	0.24665	.01	Selected
33.	0.192784	.05	Selected	34.	0.31478	.01	Selected
35.	0.383694	.01	Selected	36.	0.23621	.01	Selected
37.	0.253681	.01	Selected	38.	0.01725	n.s	Rejected
39.	0.321463	.01	Selected	40.	0.18632	.05	Selected
41.	0.036257	n.s	Rejected	42.	0.223571	.01	Selected
43.	0.071253	n.s	Rejected	44.	0.631723	.01	Selected
45.	0.163257	.05	Selected	46.	0.423166	.01	Selected
47.	0.236937	.01	Selected	48.	0.621428	.01	Selected
49.	0.541236	.01	Selected	50.	0.036421	n.s	Rejected
51.	0.396528	.01	Selected	52.	0.632415	.01	Selected
53.	0.172536	.05	Selected	54.	0.013624	n.s	Rejected
55.	0.245321	.01	Selected	56.	0.421536	.01	Selected
57.	0.321786	.01	Selected	58.	0.183625	.05	Selected
59.	0.196327	.05	Selected	60.	0.192536	.05	Selected
61.	0.242563	.01	Selected	62.	0.025982	n.s	Rejected
63.	0.231452	.01	Selected	64.	0.231725	.01	Selected
65.	0.182368	.05	Selected	66.	0.362314	.01	Selected
67.	0.192817	.05	Selected	68.	0.185362	.05	Selected
69.	-0.14236	n.s	Rejected	70.	0.34236	.01	Selected
71.	0.169713	.05	Selected	72.	0.271423	.01	Selected
73.	0.189852	.05	Selected	74.	0.163251	.05	Selected
75.	0.237142	.01	Selected	76.	0.1963	.05	Selected
77.	0.2536	.01	Selected	78.	0.17528	.05	Selected
79.	0.220244	.01	Selected	80.	0.35274	.01	Selected
81.	0.114278	n.s	Rejected	82.	0.23142	.01	Selected
83.	0.238510	.01	Selected	84.	0.036921	n.s	Rejected
85.	0.236142	.01	Selected	86.	0.23145	.01	Selected
87.	0.216321	.01	Selected	88.	0.185470	.05	Selected
89.	-0.11236	n.s	Rejected				

Table 2– clearly shows that after calculating discrimination index 71 items were retained and 18 items were rejected in the moral intelligence scale (M.I.S.

Difficulty Index (D.I)

The difficulty index (D.I) of an item is represented by the percentage of teachers who responded to it correctly. For calculating difficulty level at first we made two groups of data in first group or high achievers group that contains the participants who give true answer and second group or low achievers group that contains the participants who give wrong answer. The numbers of correct responses in both groups were counted for each question. For each question the difficulty index was calculated using the Gilford's formula:

$$P = \frac{(R\text{-}W/K\text{-}1)}{N}$$

Where 'P' represents the percentage of the teachers knowing the items in real, 'R' represent the percentage of pupil-teachers doing the item correctly, 'W' stands for the percentage of the students doing incorrectly. 'N' stand for the total number of pupil-teachers in sample, 'K' stands for the number of options in the scale, and 'HR' stands for the number of students who does not attempt items.

Table 3: Showing Item Analysis Results for Difficulty Value

S.N.	P	Remarks	S.N.	P	Remarks
1	0.34	Selected	2	-0.231	Rejected
3	0.42	Selected	4	0.48	Selected
5	0.76	Selected	6	0.442	Selected
7	0.31	Selected	8	0.311	Selected
9	0.37	Selected	10	0.652	Selected
11	0.343	Selected	12	0.563	Selected
13	0.571	Selected	14	0.425	Selected
15	-0.19	Rejected	16	0.123	Rejected
17	0.441	Selected	18	0.47	Selected
19	0.41	Selected	20	0.634	Selected
21	0.32	Selected	22	-0.12	Rejected
23	0.35	Selected	24	0.234	Selected
25	0.412	Selected	26	0.106	Rejected
27	0.342	Selected	28	0.31	Selected
29	0.425	Selected	30	0.53	Selected
31	0.601	Selected	32	0.54	Selected
33	0.324	Selected	34	0.103	Rejected
35	0.392	Selected	36	0.451	Selected
37	0.104	Rejected	38	0.362	Selected
39	0.23	Selected	40	0.324	Selected
41	0.141	Rejected	42	0.320	Selected
43	0.12	Rejected	44	0.108	Rejected
45	0.32	Selected	46	0.72	Selected
47	0.54	Selected	48	0.63	Selected
49	0.31	Selected	50	0.223	Selected
51	0.24	Selected	52	0.46	Selected
53	0.42	Selected	54	0.47	Selected
55	0.304	Selected	56	0.22	Selected
57	0.35	Selected	58	0.64	Selected
59	0.84	Selected	60	0.285	Selected
61	0.524	Selected	62	0.46	Selected
63	0.623	Selected	64	0.71	Selected
65	0.62	Selected	67	0.52	Selected
68	0.45	Selected	69	0.44	Selected
70	0.43	Selected	71	0.35	Selected

Table 3- Clearly shows that after calculating difficulty value for each item 09 items were rejected and only 62 Items were selected in the MIS for the final format. The selected items were printed in a booklet from with necessary instructions.

Item Selection

The items were evaluated and selected with the help of discrimination power and difficulty index of preliminary draft tool. Only those items whose falls above 0.159 at 0.05 level of significance and 0.208 at 0.01 level of significance were selected and those items whose difficulty index (D.I) ranges from 20% to 90% (Aggarwal, 2014-15, P.98) were selected and the rest of the items were not selected for the final study. Thus the final version of moral intelligence scale (MIS) had only 62 items. The distribution of the selected items is presented dimension wise in table 3.5.

Table 4 – Showing dimension wise distribution of selected items

S. No	Dimensions	No of items
1	Integrity	16
2	Respect	12
3	Kindness	13
4	Conscience	10
5	Self- control	11
Total	05	62

Reliability of the Scale

The reliability of the scale was determined by calculating reliability coefficient on a sample of 150 Pupil teachers taken as subject. The split half reliability coefficient was found to be 0.74 by spearman Brown formula. It justified that the Moral Intelligence Scale (MIS) was a reliable tool.

Validity of the Scale

When the items were written as per the blueprint, after revision, the tool was given to teacher educators, research scholars, psychologists and judgments. The suggestions, modification and evaluation by experts and judges confirm its face and content validity. The process of Item analysis also ensures item validity of the scale. All items were related to the variable have high content validity. The predictive validity was computed by the product moment method which was 0.70. Concurrent validity was 0.77 which was calculated by discrimination method in which we use point bi serial method.

Norms for the Scale

A norm represents a typical level of performance for a particular group. Norms are established by determining what persons in a representative group actually do on a test. It is required to establish norms for all those variables which had significant effect on the outcome of the test raw score. In the present study mean values (M) were calculated of different variable for grade norms. The investigator of the present study framed and computed the grade norms in respect of the sample for different variables as follows:-

Table 3.6 Showing Norms for the Scale

Variable/Class	Type	Grade norms (M)
Gender	Male	58
	Female	57
Type of Pupil-teachers	B.Ed	46
	D.El.Ed	47

Variable/Class	Type	Grade norms (M)
Academic stream	Science	58
	Art	55
Locality	Rural	58
	Urban	59
Total	08	55

Scoring Pattern of the Moral Intelligence Scale

The subject is required to enter a tick (✓) in the appropriate place in the response sheet to express his/her degree of acceptance or rejection of the idea contained in the statement. Scoring was done by according 1 and 0 marks to the responses 'yes' and 'No' respectively for favorable statements. The score was reversed for unfavorable statements.

CONCLUSION

In the present study all pupil-teachers of kumaun region were the population of the study. Stratified random sampling was adopted for the selection of 150 samples from Almora and Nanital Districts of kumaun region. An initial draft of 100 items was prepared by the researcher; the pool of items was then given to experts of the field and teacher educators and other staff associated with teacher training course for deciding the content, objectives and type of statements to be included in the scale. After judges opinion 89 items out of 100 were selected for first try out. Item analysis was done by calculating the Difficulty index level and Discrimination power for each of the 89 items of the pilot study. The point bi serial correlation has been calculated. Only such items were selected which have the value of point bi serial 'rpbi' more than 0.159 at 0.05 level of significance and 0.208 at 0.01 level of significance were selected and most items have difficulty index (D.I) value between the ranges 0.20 to 0.90. Based on the results of statistical analysis 27 items were deleted and 62 items were retained and those items were selected for the final study. Split-half reliability of the scale was found to be 0.74. The predictive validity and concurrent validity was 0.70 and 0.77. The total grade norms value was 110. Thus the constructed and standardized MIS was reliable and valid. The selected 62 items were printed in a booklet form with necessary instructions.

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Conflict of Interest
The author declared no conflict of interests.