

ANALYSIS OF INTEREST IN INQUIRY SCALE FOR STUDENT-TEACHERS OF B.ED PROGRAMME

¹Somashekhara M, ²Jagannatha K Dange

¹Research scholar, ²Associate Professor

¹Department of P.G. Studies and Research in Education,

¹Kuvempu University, Shankaraghatta- 577 451, Shimoga, Karnataka, India.

Abstract : Interest in inquiry is the ability to solve problems through a systematic process involving sensing the problem, formulating hypothesis and verifying the hypothesis after collecting and analyzing evidence. The development of interest in inquiry has been mentioned as a nurturant effect of 'Advance organizer model of teaching'. This paper explores the procedure of developing and validating the scale to measure interest in inquiry among student-teachers of B.Ed programme. Initial pools of 50 test items were constructed. The validity of the scale was established by experts' suggestions. Reliability of the scale was established with the help of Cronbach's alpha statistics, which is the most common measure of internal consistency. As a result of item analysis, 38 items were deleted and 12 items were selected to form the final scale.

IndexTerms - Interest in inquiry, advance organizer model.

I. INTRODUCTION

John Dewey once described interest as 'being engaged, engrossed, or entirely taken up with an activity, object, or topic' (Dewey, 1913, p. 17). More contemporary interest theorists have divided interest into two components: individual interest and situational interest (Hidi & Baird, 1988; Renninger, 2000). Interest is often thought of as a process that contributes to learning and achievement. That is, being interested in a topic is a mental resource that enhances learning, which then leads to better performance and achievement (Hidi, 1990). Indeed, research has demonstrated that both situational and individual interest promote attention, recall, task persistence, and effort (Ainley, Hidi, & Berndorff, 2002; Hidi, 1990; Hidi & Renninger, 2006).

Interest is a powerful motivational process that energizes learning, guides academic and career trajectories, and is essential to academic success. Interest is both a psychological state of attention and affect toward a particular object or topic, and an enduring predisposition to reengage over time. Integrating these two definitions, the four-phase model of interest development guides interventions that promote interest and capitalize on existing interests. Four interest-enhancing interventions seem useful: attention-getting settings, contexts evoking prior individual interest, problem-based learning, and enhancing utility value. Promoting interest can contribute to a more engaged, motivated, learning experience for students (Judith M Harackiewicz, Jessi L. Smith and Stacy J. Priniski, 2016)

Inquiry is an approach to learning that involves a process of exploring the natural or material world by asking questions, making discoveries, and testing. Inquiry, in the context of science and education, should mirror as closely as possible the enterprise of doing real science (National Science Foundation, 2000).

The development of interest in inquiry has been mentioned as a nurturant effect of an advance organizer model of teaching (Joyce and Weil, 2003). This nurturant effect has two aspects, one is the act of inquiry and the other is interest in inquiry act. The act of inquiry has two connotations. One is related to someone's inquisitiveness or curiosity to know the things and the other is related to someone's ability to solve problems through a systematic process involving sensing the problem, formulating hypothesis and verifying the hypothesis after collecting and analyzing evidence. Interest in inquiry implies someone likes or dislikes in the inquiry act.

Advance organizer model of teaching promotes the learner's inquiry ability by encouraging them to initiate questions, to recognize the difference between hypothesis and fact, to find out meaning for their own questions, etc. which constitute inquiry as a problem solving act. Existing cognitive structure plays a vital role in problem solving and it is evident from the fact that the solution to any given problem involves a reorganization of the residue of past experiences so as to fit the particular requirements of the current problem situation (Ausubel et.al, 1978). Hence, while operationalizing this nurturant effect, inquiry as a problem solving act was taken into consideration. As a result, three major steps of the inquiry act, namely sensing the problem, formulating hypothesis and verifying the hypothesis were taken for the test construction. Student-teacher's likes and dislikes in these three steps of inquiry formed the test on interest in the inquiry. The three steps of inquiry constituted the three components of the test towards which student-teacher's interest had to be studied.

After reviewing many studies, it was found that there is a need for developing a scale which measures interest in inquiry among student-teachers. So, interest in inquiry scale was developed. The procedure involved in the development of interest in inquiry scale is explained below.

II. DEVELOPMENT OF ITEMS

Initial pools of 50 test items were constructed. These items were examined by the researcher himself. Then, the test comprising the pool of items was given to experts for examination in terms of their validity, the ambiguity of the words used, length of the statement, the appropriateness of the situations taken. Based on their comments and suggestions, all those items requiring modifications were rewritten by the researcher. Thus, a total of 42 items was retained in the test for try-out. The test containing 42 items under two different dimensions was given to an English editor for editing. There were 14 items under the dimension 'daily life situations' and 28 items under the dimension 'classroom situations'. The tool constructed by N. K. Dash in 1994 is kept basis for the construction of the same.

III. FORMAT AND NATURE OF ITEMS

Since the subject of study is 'Psychology of the learners', student-teacher's interest in inquiry into educational and psychological issues had to be studied. The best way of doing this is to study the behaviour representing the construct in student-teachers' life situations. As this involves a number of constraints on the part of the researcher, e.g. time to be devoted, number of student-teachers involved, the researcher decided to present these situations in the form of items constituting a test to which student-teachers would respond. While choosing the situations for item construction, Student-teacher's own environment was taken into consideration as they are more sensitive to and take an interest in the situations which concern them. Therefore, Student-teacher's own home, neighborhood, school, classroom, peer circle formed the situations based on which items were constructed. Each test item consists of a stem which describes a situation in which student-teacher had to exhibit their likes or dislikes. The situations selected were of three types.

In the first type of situations, student-teacher had to show their interest in sensing the problem. In the second type of situations, they had to show their interest in formulating the hypothesis about the problem, and in the third type of situations they had to show their interest in verifying the problem.

The items were provided with three possible alternative responses from which the student-teacher is required to select one response. These three responses represented three degrees of interest. One response depicted that student-teacher was 'most interested', the second, 'moderately interested', and the third, 'least interested'. Each stem consists the situation that student-teacher did not face any ambiguity in understanding the stem and got biased to a particular response. Therefore, while fudging student-teacher's interest in inquiry, his/her likes or dislikes in all the components of inquiry had to be taken into account.

IV. RESPONSE PATTERN

While responding to the test items, the respondents had to read the statement properly, place him/her in that particular situation and think of the solution in terms of the alternative solutions to the situation given. Then, he/she had to encircle the number against the alternative to which he/she thought as the best. This involved a mental process which included understanding the situation presented, distinguishing between the alternatives, placing oneself in a particular situation and choosing the best alternative.

V. SCORING PROCEDURE

It has already been pointed out previously that the three responses represented three degrees (most, moderate, and the least) of interest in inquiry. These three alternatives were assigned weightage of 3, 2, and 1 respectively as these alternatives appeared in each item. As a result, the maximum score of the test was 126 and the minimum score was 42. With the above guidelines evolved for scoring, the responses were scored and the total score of each respondent was arrived at.

VI. ESTABLISHING VALIDITY

The statements on the scale are all related to the area of study and each statement independently focuses on what it claims to measure. This confirms the face validity of the scale. Content validity was established for 'interest in inquiry' scale by the suggestions of 10 experts, which included Research guide, Educational psychology experts and senior Teacher Educators. The experts agreed that the statements in the 'interest in inquiry' scale are relevant and worthwhile for collecting the data and by considering the suggestions of the experts, some of the items and responses were modified and rewritten. The experts were satisfied with the relevance of the test items and the scoring procedures. Thus, the content validity of the tool was established. This implies that the 'interest in inquiry' scale is comprehensive and relevant.

VII. ESTABLISHING RELIABILITY

7.1 Try-out of the Tool

To make a selection from the pool of 42 items, tryout was done. This needed student-teachers of B.Ed programme. Therefore, Mythri college of Education, Shivamogga, Karnataka, was selected for the tryout purpose. The researcher ensured that the tryout sample and experimental sample were equal in relation to the medium of instruction, age, settings of the college, etc. Both the colleges representing try-out sample and experimental sample follow 'English' as the medium of instruction and are affiliated to the Kuvempu University. The age level of the student-teachers in both the situations was almost the same. The sample for the tryout consists of 32 student-teachers of B.Ed programme. During the tryout time, student-teachers were told about the purpose of the test. Student-teachers were placed in a comfortable situation during the tryout. The student-teachers were allowed to take their own time to respond to the items.

7.2 Cronbach's Alpha method

Cronbach's alpha is the most common measure of internal consistency (reliability). It is most commonly used when multiple Likert questions in a survey/questionnaire that form a scale and to determine if the scale is reliable. The Reliability test of 'interest in inquiry scale' was found to be 0.541 for the entire 42 items by the use of Cronbach's Alpha reliability formula.

Table 1: Item wise Cronbach's Alpha reliability

| Sl. No | Items | Corrected item total correlation | Remark |
|--------|--|----------------------------------|--------------|
| 1. | Your mobile is found missing from your hostel room. You strongly believe that your roommate might have taken it. What would you do then? | -0.054 | Not accepted |
| 2. | Suppose you came to know that at the back of your shirt someone has written 'Donkey'. What would you do then? | 0.082 | Not accepted |
| 3. | While your close friends are fighting in front of you, what will do? | 0.005 | Not accepted |
| 4. | Once you see an accident on the way to home, how do you respond? | 0.385 | Accepted |

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| 5. | After reaching at the college you find no lunch box in the bag, how do you deal with it? | 0.351 | Accepted |
| 6. | Suppose you are so much disturbed by one of your friends who criticized very badly about your teaching. What would be your response to it? | 0.089 | Not accepted |
| 7. | Your friend comes to college regularly at 9.00 a.m., but one day he does not reach college on time. What will you do then? | 0.397 | Accepted |
| 8. | Suppose your lecturer punishes one of your close friends, seeing that you feel very bad about it. In this case: | 0.067 | Not accepted |
| 9. | Suppose, somebody has complained to the class teacher that you have stolen money from the bag of your classmate. You are thinking of catching the culprit. What will you do then? | -0.131 | Not accepted |
| 10. | You see your friend disappointed on his way to college. What do you do in this case? | -0.256 | Not accepted |
| 11. | In the last day of the study trip one of your classmates is found missing. In this case: | 0.127 | Not accepted |
| 12. | Suppose one student disturbs a lot in the class, what would be your approach to him? | -0.250 | Not accepted |
| 13. | Suppose, one of your teachers under-estimates you always, how do you react to it? | -0.086 | Not accepted |
| 14. | If your teacher asks you to make an evaluation of a school system, what would be the most expected confident decision from you? | -0.018 | Not accepted |
| 15. | Suppose, as a class leader it is your duty to find the student who did not submit the lesson plan. What would be the most suitable action from you in the following? | -0.248 | Not accepted |
| 16. | Once one of your friends has given you notes to read. You think that the notes are not correct. To prove this what would you do? | 0.393 | Accepted |
| 17. | One day, your intimate friend does not come to participate in a video conference to discuss educational issues. You are very much worried about it. What do you like to do then? | 0.144 | Not accepted |
| 18. | Before entering score of science subject into a register, teacher asks the marks of all. Feeling that your close friend is not saying the actual score, what do you do? | 0.225 | Not accepted |
| 19. | Teachers ask you to suggest some kind of sports competitions for the upcoming sports day, what would be the appropriate response according to you? | 0.146 | Not accepted |
| 20. | Suppose your college loses at a quiz competition with other college team. Being a member this quiz team how do you face this failure? | 0.265 | Not accepted |
| 21. | One of your students has come always without studying, as a teacher, how would you deal with it? | 0.404 | Accepted |
| 22. | One of the students has come always late to the school, how do you handle the problem? | 0.258 | Not accepted |
| 23. | One day morning you find 'bad words' written on the school wall, how would you react to it as a teacher? | 0.430 | Accepted |
| 24. | Once you find a group of people standing outside the principal's chamber shouting loudly, as a principal how do you face it? | 0.392 | Accepted |
| 25. | If a parent complains against a teacher about the correction of the book, as a class teacher how do you respond to it? | -0.005 | Not accepted |
| 26. | Once you and your friend sit in front of a computer for word competition. But you find that your friend does not take interest in the contest. In this situation: | 0.198 | Not accepted |
| 27. | You find that your friend is not taking interest in studies. What do you like to do then? | 0.451 | Accepted |
| 28. | Since your close friend is afraid of the principal, how do you help him/her? | 0.629 | Accepted |
| 29. | One of your class mates will not mingle with girls in the class. Nobody in the class is ready to accept him to their group. How do you tackle it? | 0.306 | Accepted |
| 30. | One of your friends is having suicide tendency, how do you help him? | 0.128 | Not accepted |
| 31. | You are afraid to come out in the darkness, how do manage yourself. | 0.092 | Not accepted |
| 32. | Your friend shares with you that he/she is finding stress in studies, how do you help him? | -0.124 | Not accepted |
| 33. | You are feeling a kind of attachment to a girl, how do you manage in this situation? | 0.355 | Accepted |
| 34. | Suppose you are having so much irritation with a classmate, how do you get out of it? | 0.179 | Not accepted |
| 35. | You are not interested in a particular subject, how do you deal with this kind of feeling? | 0.199 | Not accepted |
| 36. | While you are in an online class, online class gets disconnected. After waiting for some time you find that it does not get connected. In this case: | 0.154 | Not accepted |
| 37. | If your personal computer gets corrupted and all data are deleted. What will you do when the incident is over? | 0.528 | Accepted |
| 38. | Suppose you lost important collection of articles and books on your pen drive. In this case: | -0.089 | Not accepted |
| 39. | Suppose, your Google account is blocked by hackers. What do you like to do then? | -0.246 | Not accepted |

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| 40. | Once you come to know somebody has taken the pendrive and deleted the data in it and you think that Rahul, might have deleted it. What would you do then? | 0.172 | Not accepted |
| 41. | You find a mobile app related to your course on play store. What do you like to do then? | -0.223 | Not accepted |
| 42. | MBA students bring a laptop to your house for selling as a part of their studies, how do you respond to it? | 0.039 | Not accepted |

7.3 Selection of Items

Cronbach's Alpha was used to assess the degree of internal consistency among all sets of items, and then the task value was calculated. Items with 'r' values less than 0.30 were rejected. According to De Vaus (2004) anything less than 0.30 is a weak correlation for item analysis. In order to form the final scale, out of 46 statements, as many as 12 statements having 'r' value greater than 0.30 were chosen. Higher the score in this scale grater will be the interest in inquiry. As a result of the item analysis carried out for item selection, a total number of 12 items were selected for the final form of the test. There were six items under each component.

VIII. CONCLUSION

The validated scale to measure interest in inquiry can be used to measure interest in inquiry among B.Ed. student-teachers to find out and analyze various factors associated, so that necessary steps can be taken to create environment in which the emphasis can be given to enhance interest in inquiry among student-teachers in their learning process.

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