DEVELOPMENT AND STANDARDIZATION OF INFORMATION PROCESSING SKILLS SCALE FOR HIGHER SECONDARY STUDENTS

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ABSTRACT

The present study is an attempt to construct an information processing skills scale for higher secondary students. Information processing skills scale was developed and standardized based on the theoretical concept "Information skills in the school" engaging learners in constructing knowledge by State of New South Wales, Department of Education and Training (2007) by administering 325 randomly selected higher secondary school students of Puducherry region, thereby conducting item analysis to eliminate the inconsistent items in the tool. The final form of information processing skills scale consists of 47 items classified into six dimensions, namely-defining, locating, selecting, organizing, presenting, and assessing. All the items of information processing skills scale are likert type with five point rating.

Keywords: Development, Standardization, Information Processing Skills, Higher Secondary Students.

INTRODUCTION

The important task of education in this twenty-first century is to practice students to make use of available information effectively, either it may be in school or their personal lives, as a responsible person of the society (Akinsola et al., 2007). Life without any piece of information is impossible. It may be your school library where you search books, magazines, and newspapers for information in order to complete your teacher's assignment. It may be your workplace, where we exchange information between our seniors, friends, and subordinates (Shantaram, 2012). It may be your milk vendor, groceries merchant, or your driver who provides you with a lot of information. We also receive information through mobile phones, television, and internet when we need for it. Information is needed for our different types of work, function, problems in order to overcome it successfully (Kumaravelu, 2014).

1. Information Challenges for Development

Students at present are expected to restructure their learning processes more actively. "Such a restructuring of the learning process will not only enhance the critical thinking skills of students, but will also empower them for lifelong learning and the effective performance of professional and civic responsibilities". Education is shifting its methods of teaching from textbook teaching to rich resource-based learning based on the data-rich situation of the information age (Roberts, 2004). Information search process seems to be the holistic learning process connecting emotional experience as well as the intelligence of the students (ACRL, 2000). Students who are very clear about the information process can prepare and plan the assignments for their teachers rather than mere rote learning (Sasikala and Dhanraju, 2011).

Assignments are undertaken by students to achieve success in their academic area. Information is closely related with gender and development. Information and knowledge are interlinked to meet academic challenges, thereby come out of it with bigger achievements in reality (Rajaram, 2006). Information technology with all its advancements had brought a very big revolution in providing information (Probert, 2009). Thus changing old age into an information age, emergence of new

knowledge and information, their processing- defining, locating, selecting, organizing, presenting, and assessing. This information processing definition extends beyond library skills and beyond the use of discrete skills and strategies with the ability to use complex information from a variety of sources to develop meaning or solve problems (Kuhlthau, 1999).

2. Need and Significance

From the sustainable evidence of the earlier paragraphs, the information plays a vital role in every aspects of life, either it may be day-to-day life, economic, political, and in social settings. Similarly, education and academic achievement can be made more successful only if the required information are available when it is needed by the pupil (Hara, 1996). Important decisions cannot be taken without any proper information and in total, there cannot be no growth possible without the support of information. Information is related to everyone in the world. Human is aware of the word "Information" in their respective languages. There cannot be any language without describing the term "Information" (Heinström, 2000). It is part and participle of every part of our lives. Mobile, radio, and T.V provides us the Information what had happened during the period of slept at night as soon as we awake in the morning (Martin and Rader, 2002). Students periodically visit the library, newspaper, magazines, and journals for Information that they need to complete an assignment. In overall, Information is needed in every area of human life (Bhatt, 2011).

3. Research Questions

The researcher was developed for achieving the following research question:

- Can the Information Processing Skills Scale developed and Standardized for Higher Secondary Students? (IPSHSS).

4. Research Design

Research design is a blue print of the research process. It includes the method, sample, sampling techniques, collection of data, and data analysis.

4.1 Method of Study, Sample, and Sampling Techniques of the Study

The investigator has used normative survey method for the present study to conduct research. The sample consists of 325 higher secondary students and was selected from Government and Private schools in Puducherry region by using stratified random sampling technique.

4.2 Construction of a Tool

In any type of tool, the preparation of test plan is essential. So the researcher has planned the objectives, sample, content of the test items, and procedure to be followed in the standardization of background of the theoretical concept "Information skills in the school" engaging learners in constructing knowledge by State of New South Wales, Department of Education and Training (2007).

4.3 Development of Information Processing Skills for Higher Secondary Students

The researcher went through the concept of Information processing skills in detail with the help of some useful sources to follow the State of New South Wales (NSW), Department of Education and Training Information processing skills (2007) construct. The dimensions of Information processing skills are defining, locating, selecting, organizing, presenting, and assessing.

The researcher discussed with eminent scholars in the field of education and psychology and reviewed various studies for the items of information processing skills. Situational scale was found to be a good choice. A particular situation is given in each question and four alternative ways of behavior are given in the answer. The respondents will go through each situation and they have to respond how they will behave in that particular situation. It is therefore intended to write 61 items under six components of the information processing skills.

4.4 Item Selection

The researcher consulted the constructed items with one Professor of Education and two Associate Professors of Education. They are the experts in the field of Information processing skills. They were requested to judge the suitability of the items. These experts constructively criticized and gave valuable suggestions. The wordings of some of the statements were changed and modified and irrelevant statements were removed. Now the scale consists of 61 items. Dimension wise distribution is given in Table 1.

S. No.	Domains of Information Processing Skills	Number of Items
1.	Defining	10
2.	Locating	12
3.	Selecting	8
4.	Organizing	9
5.	Presenting	10
6.	Assessing	12
	Total	61

Table 1. Dimension wise Distribution of Items of IPS

4.5 Administration of the Tool

In order to collect data for the present study, the researcher administered the tool individually with proper permission from various schools in Puducherry region. The researcher explained about the concept and also guidelines about filling the tool. Wherever the respondents face problems, the researcher rectified it immediately.

5. Pilot Study

The information processing skills scale that consists of 61 items were administered on the sample of 100 higher secondary students. The scale consists of positive and negative items. To compute the Information Processing Skills for Higher secondary students, for all positive statements, a score of 5, 4, 3, 2, 1 is to be given, respectively for the responses 'Strongly agree', 'Agree', 'Neutral', 'Disagree', 'Strongly disagree'. For each negative statement, a score of 1, 2, 3, 4, 5 is to be given respectively for the responses 'Strongly agree', 'Agree', 'Neutral', 'Disagree', and 'Strongly disagree'. In this study 47 items were selected and 14 items were rejected. After which the rejected items were corrected and subject to standardization. Finally 61 items have been selected for the final study.

5.1 Item Analysis

The foremost step in the standardization of any tool construction is item analysis. For this purpose, the researcher used 100 answer sheets of the sample collected. The individual information processing skill scores for entire 100 samples were found out and they were arranged from the highest to the lowest score. 27% of the subjects with highest scores and 27% with lowest scores taken were selected as criterion groups. Then the mean response score of each statement was calculated separately for each criterion group. The "t" value for each statement was calculated using the following formula (Edwards, 1957).

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum(X_H - \bar{X}_H)^2 + \sum(X_L - \bar{X}_L)^2}{n\,(n-1)}}} \qquad (1)$$

where

$\bar{X}_H$ = the mean score on a given statement for the high group,

$\bar{X}_L$ = the mean score on the statement for the low group,

X_H = the score for a given individual for a given statement in the high group,

X_L = the score for a given individual for a given statement in the low group,

n = number of subjects in the criterion group.

The value of "t" is a measure of the extent to which a given statement differentiates between the high group and low group. According to Edwards (1957), any "t" value equal to or greater than 1.97 indicates that the average response of the high and low groups to a statement differs significantly, provided that the number of subjects in the high group and low group is 25 or more ("t" values of the statements included in the draft scale are given in Table 2).

Table 2 reveals 't' values of all the statements. The investigator selected the statements based on the table value, if the statement values are higher than the table value than those items are selected and retained for the final form of the scale.

5.2 Content and Face Validity

Content and Face Validity was established by giving the scale to two experts in the field of psychology and education and necessary modifications were made as per their suggestions.

5.2.1 Reliability

Reliability of the scale was established through test-retest method. The test was administered to 200 first year higher secondary students at an interval of one month duration. The correlation coefficient between the tests is found to be 0.78. Hence the Information Processing Skills scale is highly reliable.

Item No.	t-value	Item No.	t-value	Item No.	t-value	Item No.	t-value
1	4.383	17	4.185	33	*8.627	49	*6.818
2	* 6.716	18	*5.064	34	*5.297	50	*7.198
3	*5.353	19	*5.805	35	*7.332	51	*5.786
4	*6.714	20	*7.334	36	*7.424	52	*6.428
5	4.009	21	*5.345	37	*8.779	53	*7.969
6	2.285	22	*7.587	38	*7.883	54	*6.363
7	*4.941	23	4.243	39	*7.441	55	*7.044
8	*6.928	24	*6.189	40	2.961	56	*7.435
9	*9.477	25	*6.637	41	*8.308	57	*8.330
10	*5.431	26	4.900	42	*5.823	58	*7.508
11	2.217	27	*6.660	43	4.461	59	*6.603
12	*7.303	28	*7.351	44	*6.593	60	*8.523
13	*5.589	29	*5.936	45	*5.553	61	*6.207
14	1.276	30	4.081	46	2.490		
15	*5.806	31	*6.146	47	*6.968		
16	4.134	32	4.174	48	*6.998		

* indicates items selected for the final scale

Table 2. 't' value for Final Study

5.2.2 Norms

The maximum marks of the information processing skills scale is 47. The entire samples were divided into three groups (Table 3).

6. Statistical Techniques

For standardizing the test of information processing skills scale, the following statistical techniques were used.

- Descriptive Analysis (Mean and standard deviation).
- Differential Analysis ('t' test and 'F' test).
- Correlation Analysis.

7. Findings

The aim of the research is to construct and standardize information processing skills scale. In order to achieve the aim, the researcher constructed information processing skills scale by following steps, such as item selection and item analysis. After item analysis, the final form was given to the information processing skills scale. The reliability and validity was also tested and found to be good. The general norms of the entire sample were tested and general norms are presented in the form of a tabular column (Table 3).

S. No.	Level of IPS	Scores Range	Scores %
1	Low	1-16	1%-40%
2	Average	17-27	41%-60%
3	High	28-47	61%-100%

Table 3. Sample Groups

8. Educational Implications

Exploration of information could offer good solution to the information search of the students. At present, there has been a serious explosion of knowledge where the students find it difficult to choose the required information they require for Information processing skills, which plays a significant role in obtaining the necessary information the students are looking for. It is highly important for students to develop these skills in using information as the part of the knowledge, skills for their lifelong learning. Information processing skills scale is an exact tool for searching human being needs when they are in the need of information. Hence researchers, teachers, teacher trainees, and students could use this tool to find out the information processing skill quotients and to know how to develop their information processing skills.

Conclusion

The current study provides a ground work for investigation of the information processing skills scale for higher secondary students. It further helped to improve understanding of the experience of information processing skills from information-specific viewpoint. The study was conducted to construct valid and reliable information processing skills scale. The test was standardized from a sample of 325 students studying in higher secondary schools. The reliability of the test was determined through test-retest method, which was 0.78. Hence, the constructed information processing skills scale has a high reliability and validity.

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