

Study of Information Communication Technology Based Psycho-Cognitive Profiling of Students

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Abstract - India has more than 50% of its population below the age of 25 and more than 65% below the age of 35. It is found that 1 out of 5 in this age group experiences a mental, emotional or behavioral disorder globally that is severe enough to seriously affect their daily functioning at home, school, or within the community. According to the World Health Organization (WHO) mental health disorders are one of the leading causes of disability worldwide. Three out of the ten leading causes of disability in people between the ages of 15 and 44 are mental disorders, and the other causes are often associated with mental disorders. Both retrospective and prospective researches have shown that most adulthood mental disorders begin in childhood and adolescence. However, though a large proportion of adolescents and youth are not having any diagnosed illness, they are found to be lacking in communication and presentation skills, problem-solving capabilities and generic abilities, and an overall low level of confidence. It has been recently reported that a significant proportion of graduates, nearly 47%, were found not employable in any sector, given their English language and cognitive skills. Some other problems of the youth relate with smartness, confidence, presence of mind, patience, emotions, time management and good communication skills. A recent survey highlighted the three major lacking skills in educated youth: Communication skill, Analytical skill and problem-solving and Domain knowledge.

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INTRODUCTION

Psychology and the information & communication technology. The researchers in psychology have done lot of work in this regard but still connectivity to the technology is still lacking. The proposed study was focus on create awareness, providing the analysis and solution on internet. This e-psychology platform was based on modern informative and communicative tools. The design meticulously is an effort to provide an innovative platform that was user-centered, user-friendly, modular and flexible. In addition, the aim was to exploit in full all the capabilities of contemporary Internet technologies for the benefit of both students and academic institutions with effort to primarily cover as much as possible the psychological needs of the aforementioned users of the platform.

Psycho cognitive profile: In the study an effort was made to create a comprehensive picture of selected sample with regard to psychological characteristics and cognitive abilities. Psycho cognitive profile was include socio-demographic detail, personality, multiple intelligence, mental health aspects and Meta-cognitive skills. Such detailed picture might help in enhancing awareness about self. Moreover mental health status examination and screening may help in identifying high-risk population. A specific counseling module and enhancement strategies may then be developed for

selected sample. The objectives of the proposed work are development of psycho cognitive profile of the sample under study and find out the descriptive status the predictors and criterion variables. Model development for the improvement of the psycho-cognitive profile. The present study aimed at developing the psycho-cognitive profile of adolescents of 17 to 21 years. The profile included the detailed description of personality type, multiple intelligence, meta-cognitive skills and mental health status of the sample under study.

On practical grounds, this necessitates the collaborative efforts of psychologists and IT professionals. With this rationalization thinker an attempt was made to develop IT-enabled psychological measurement in the specifically identified areas. The testing and interpretation was conducted for a significantly sample, so as to assess the current mental health status and general psycho-cognitive profile of student youth of Nashik. The major findings are that current status in personality types, multiple intelligences, meta-cognitive skills and Mental Health. Only the musical type intelligence.

The present ICT enabled platform (E-Psychology) is user-friendly, adaptive and flexible environment to support synchronous and asynchronous

psychological services to the psychologists with the help of informative and communicative tools (ICT). The current platform offers a number of services such as information of psychological fields, tests, assessment, diagnosis and support. This can be further extended to support therapy, consultation and intervention through an effective exploitation of ICTs. E-psychology is not the alternative field of psychology but a resource to enhance the conventional psychological process.

OBJECTIVES OF THE STUDY

- To descriptive study of the sample on Personality, Multiple Intelligence, Meta-cognitive Skills and Mental Health.
- To analyze the descriptive statistics (Mean and Standard Deviation) of the sample under study.
- To identify the status predictor variable (Personality, Multiple Intelligence) for the criterion variables (Meta-cognitive Skills and Mental health) of the sample under study.

SAMPLE OF THE STUDY

The sample of 50 adolescents is chosen for the present study from Nashik by the purposive sampling method.

Rationale for Sample Selection

Despite the youth advantage that is positioning India as a rising power in all spheres and sectors, a growing young population is facing depression and mental disorders because of competition, loneliness, connectivity, workload, and unemployment. According to the WHO, India has the higher rate of suicide among youth, and the age is going down rapidly. A large number of this population is on the brink.

Inclusion Criterion of Subjects

Subjects who fulfilled the following criterion were included:

- Whose age range are between 18 to 21 years
- The sample is familiar with information technology.

Table no. 1: Characteristics of Sample (N=50)

Characteristics	Group	Percentage
Gender	Male	60.00
	Female	40.00
Class	School Students	32.33
	College Students	67.67

VARIABLES OF THE STUDY

For the present study, the variables selected are as follows:

- Personality
- Multiple Intelligence
- Meta-cognitive Skills
- Mental Health

TOOLS OF DATA COLLECTION

To investigate the type of personality, multiple intelligence (predictive parameters) meta-cognitive skills & mental health (criterion parameters) of youth studying in reputed college of Nashik, the chosen tools, and their details are as follows.

DEMOGRAPHIC QUESTIONNAIRE

A self-made demographic questionnaire was administered to obtain demographic information from the participants. This questionnaire included basic demographic details (i.e., name, age, class, gender, education, the medium of study, type of family, parent’s occupation) of the participants of the present study.

- Career Interest Checklist
- Multiple Intelligence Scale
- Meta-Cognitive Skills Scale
- Positive and Negative Affect Schedule-Expanded Form (PANAS-X)

PROCEDURE OF THE STUDY

The sample for the present study of 50 youths (30 males and 20 females) from the Colleges of Nashik. Administrative personnel were contacted; they were convinced about the purpose, significance, and privacy of the study. Detailed information about the identity of the researcher, the type, and purpose of the study, how to complete the questionnaires were provided to the subjects and those who expressed a desire to participate in the study. A website was developed for the collection of data where the visitor can see all the information about the study and the general idea about it. After seeking information consent were asked to register to attempt the different tests. In the registration process, general information was collected and assurance was given for the confidentiality and anonymity. After registration process participants were asked to read the instructions carefully and were encouraged to express their ideas and opinions frankly and freely. The subjects were requested to complete all the items of each measure. Sufficient time is allocated to them so that they understand each item and respond carefully. The participants were free to contact with the researcher if any difficulty with a measure or other concerns arose. The researcher addressed any questions or concerns presented by the participant on an individual basis as necessary. Prior

to the development of e-content, all the authors of the tests were contacted for seeking permission. No modifications were done in the test content.

STATISTICAL TREATMENT TOOLS

Descriptive statistics of Mean and SD at level is calculated for all the variables predictor variables (Personality, Multiple Intelligence) and criterion variables (Meta-cognitive Skills, and Mental health) under study. The statistical analysis is carried out by using IBM-SPSS-PASW 18.0 version.

DESIGN AND DEVELOPMENT OF WEB APPLICATION FOR PSYCHO-COGNITIVE PROFILING

Process of plan, create and updating of websites is known as web design. Web designing involves information structure, page layout, content management, graphic design, web-style navigation and user interface. Page layout is the arrangement of elements such as text, images, and other objects on a page. It involves principles of composition to achieve the objective of specific communication. There are two types of web layout namely graphics and web layout. The graphic includes the images, videos and in web layout, the text is arranged in the tables. Content production is the development and creation of visual or written asset, such as blog posts, videos, whitepaper or eBooks. Graphic design is used for visual communication. Graphic designs generally involve visual arts, layout, typography, and composition. Some graphic design is for corporate, publishing, advertising, product and environmental. The user interface is the interaction between the user and the computer system.

There is five type of user interface namely:

- Command line interface (CLI)
- The graphical user interface (GUI)
- Menu-driven interface
- Form-based interface
- Natural language interface (LUI or NLUI)

In the command line interface, a computer responds to the command given by the user. In GUI user uses a pointing device such as a mouse to navigate. The menu-driven interface provides the list of options and sub-option to the interface. The command can be given by entering text, image or voice. Web navigation is the process of moving around a website from one page to another page.

The web navigation is of three types namely:

- Structural navigation
- Associative navigation
- Utility navigation

STRATEGIES FOR WEB DESIGNING

To design a webpage developer should go through the subsequent steps before start to design a webpage. By using the following procedure developer can find and fulfill the necessary information, data and resources to develop the web application.

- Information Gathering
- Planning
- Design
- Development
- Testing and Delivery
- Maintenance

DEVELOPMENT TOOLS

To develop dynamic website one should know about designing language like PHP, MySQL, scripting language like javascript and JQuery along with HTML and CSS. PHP is the commonly used language for developing a dynamic website, and MySQL is used as a database. To run a dynamic website, some tools are necessary to install on computer system working as a web server, database, and PHP parser.

- HTML
- CSS
- JavaScript
- JQuery
- PHP
- MySQL
- WAMP

DESIGN STRATEGY

E-psychology is an important tool that simplifies the Psychological test and evaluation process conducted by the psychologist to access the status of psychological conditions of individuals who could be students or working professionals. This platform removes the traditional way of examination conduction and uses the latest technology to organize tests online. Compared to the traditional pen-paper tests, online tests are far more cost-effective and time-consuming. These help in objectively assessing the eligibility of the candidate for the profile. Due to easy availability of computer and internet, this method is highly popular nowadays Online tests could be conducted easily even for the students situated in remote areas, as one need not physically visit the center. Timer-based online tests ensure fair play for all, as all are given the same amount of time to complete the test. The system automatically calculates marks secured by the student and generates a report. It allows for the creation of question bank, management of results and printing of the same. The purpose of the

development of this web application is to access the adolescents between 17 to 21 years. This sample group is techno-friendly and prefers online evaluation system in place of pen and paper test. Thus, there is a strong need to develop an online evaluation system to generate a psycho-cognitive profile for adolescents. The psycho cognitive profile includes the personal and social information along with test data of personality, and multiple intelligence, Metacognitive skills, and mental health aspects.

The requirement for the web application is as follows

- A static page to describe the psychological fields and use of the application.
- A dynamic page to collect and store the personal and social information of the adolescents.
- Database for storing personal and social data along with test data and results.
- Database for the test questions, marking scheme and interpretation.
- Login/Logout page and a dashboard/personal area for the individual
- A menu-driven system for the psychological tests in the dashboard
- Display of test results in the graphical and numerical form
- Pages for Interpretation of the psychological test result
- Tools such as Contact, Feedback and change password, etc.
- Statistical analysis of adolescent’s data.

WEB SITE ADMINISTRATION

Microsoft SharePoint provides four different user roles to be assigned by the site administrator. The administrator has full access to all parts of the website to create lists and can change the design and layout of the website. Contributors can only add content to existing document libraries and lists while the reader has read-only access to the website.

C Panel

The C Panel is a Linux-based internet hosting control board that has a graphical interface and automation tools designed to host an internet website. C Panel utilizes a three-tier structure that has capabilities for directors, resellers, and end-user website homeowners to regulate the different aspects of website and server administration through a typical web browser.

RESULTS OF THE STUDY

Descriptive analysis

Descriptive statistics (means, standard deviations scores) were calculated for scores on each of the variable of interest (Table no. 2) for the sample consisting of 50 students.

Personality variable:

The table no. 2 shows the Mean and Standard Deviation for the six types of the personality.

Table no. 2: Mean and Standard Deviation for Personality

Personality Types	M	SD
Realistic	5.05	1.468
Investigative	5.37	1.326
Artistic	5.39	1.408
Social	5.34	1.154
Enterprising	5.35	1.190
Conventional	5.38	1.313

The mean value of the all the personality type is above the mid value. Artistic type is the highest shown personality with mean 5.39 and Realistic is the least shown personality with mean value 5.05.

Multiple Intelligence:

Table no. 3 shows the Mean and Standard Deviation value of Multiple Intelligence.

Table no. 3: Mean and Standard Deviation for Multiple Intelligence

Intelligence Types	M	SD
Linguistic	30.00	3.813
Logical/Mathematical	32.08	3.696
Musical	32.79	3.788
Bodily/kinesthetic	32.24	3.276
Spatial/Visual	30.22	3.077
Interpersonal	33.46	2.144
Intrapersonal	32.44	3.105

Results show that Interpersonal (33.46) is the leading intelligence type and the linguistic (30.00) is the least common intelligence.

Meta-cognitive Skills:

The table no. 4 depicts Mean and Standard Deviation on dimensions of Metacognitive Skill.

Table no. 4: Mean and Standard Deviation for Meta-cognitive Skills

Meta-cognitive Skills	M	SD
Meta-cognitive Skill	24.33	4.355
Declarative Knowledge	2.48	1.107
Procedural	2.52	1.131
Conditional	3.12	1.455
Planning	2.54	1.132
Information Management System	5.08	2.573
Comprehensive Monitoring	3.60	1.681
Debugging Strategies	2.56	1.128
Evaluation	2.47	1.129

The obtained mean scores higher than the mid values of expected score range thereby depicting the relatively high level of meta-cognitive skill in all the eight dimensions. Here information management system shows the highest mean value.

Mental Health:

In the present study, Mental Health is comprised of Mood States (Positive Affect and Negative Affect). Table no. 5 indicates Mean and Standard Deviations of Subjective Well Being – Positive Affect and Negative Affect.

Table no. 5: Mean and Standard Deviation for Positive Affect and Negative Affect

Positive Affect and Negative Affect	M	SD
▪ General Negative Affect	10.77	2.574
▪ General Positive Affect	17.83	5.814
▪ Basic Negative Emotions	11.38	2.614
✓ Fear	17.66	5.232
✓ Hostility	15.24	1.158
✓ Guilt	17.60	5.486
✓ Sadness		
▪ Basic Positive Emotions	17.36	5.331
✓ Joviality	18.04	5.004
✓ Self-Assurance	3.50	1.584
✓ Attentiveness		
▪ The other Affective States	17.54	5.320
✓ Shyness	17.84	5.236
✓ Fatigue	7.75	2.166
✓ Serenity	7.98	2.193
✓ Surprise		

Thus the present sample may be considered as high on the General Positive Affect; slightly low on the General Negative Affect; slightly high on hostility and Sadness components of Basic Negative Emotions; average on Joviality, and Attentiveness components; high on Self Assurance of Basic Positive Emotions; and Shyness, Fatigue, Serenity and Surprise components of Others Affective States.

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