CHAPTER 4

METHODOLOGY

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INTRODUCTION

Research is a careful inquiry or studies or examination by the learner in order to discover new facts, feelings, and thought to complete their further education at the learner’s centre with improving their social status. It is the creation of new knowledge to attain Physical, Mental, Spiritual and Social awareness. It can be categorized into three distinct types: basic, strategic and applied. Basic or blue-sky research is the pursuit of new knowledge without any assumptions about what it might lead to – essentially knowledge for its own sake. Strategic research is the pursuit of new knowledge, which might, in principle, have a practical application but without a precise view of the timescale or nature of the application. Applied research is knowledge, which is developed with a specific objective in mind, particularly the conversion of existing knowledge into products, processes and technologies.

Methodology is a set of methods used for learners to deliver the e-content with various e-Learning techniques through Internet. Suitable methods and media help learners to attain their academic achievement at their own pace. The method of investigation should be brief and suitable to the learner. The methodology gives answer to the questions such as methods and materials used in the study, implementation and validation tools used in the study, the source of data, procedure for data collection, and analysis of data.

The investigator decided to employ an experimental design, which has intervention of e-Learning programmes like Training Methods, Training and Feedback Methods and Training, Feedback & Guidance Methods. In this chapter, an attempt was made to describe the implementation and validation of the e-Learning packages through Internet in Yoga Education, experimental design, method of data collection, the mode of experimentation and the analysis of data. An attempt was made to differentiate among the three different experimental interventions by adding one or two additional components to the existing intervention. Accordingly, the experimental group I is noted with training alone while the experimental group II has an additional element of feedback and the experimental group III has two added elements viz. feedback & guidance. Hence, the subject of the experimental group I were given only training in Yoga Education while those of the experimental group II were given training & feedback that might help them to learn better. At the same time, the subjects of the experimental group III were given training, feedback & guidance. So, naturally the last group of people should perform better when compared to other two groups due to additional input in Yoga Education.
Web-based learning packages increasingly influenced learners to rapidly attain their academic achievement at their own place and time. Success or failure of e-Learning or online learning Instructional packages largely depends upon the technique of usages of web-based components viz. quality of e-content, Instructional strategy, attractive web designing, Interactive Multimedia implementation, Easy downloading, and Learners interest. Value based education not only tries to teach but also provides self-awareness, self-control, self-analysis and self-treatments. Hence, the learners and the teacher must infuse practicing yoga through online.

**EIP Work Design for Yoga Education:**

EIP provides Yoga Education for three chronic diseases viz., Diabetic problems, Heart Diseases and Asthma problems. It was designed with Yoga Expert, Educationalist, and Technologist. Consequently, 12 Yogasanas were selected for the above said chronic diseases. Learners can practise at learners' center. According to the learners' problems they can choose their own option to practise the respective asanas. This tutorial software can help to satisfy the different needs of the learner as a self-remedial procedure. Hence, the investigator decided to develop an online / web-based learning package to live longer without any disease.

EIP or Online Yoga Education includes many steps to access the contents:

1. Home page
2. Objectives of the Study
3. Registration for New User
4. Sign In for Existing User
5. References for Further Clarification
6. Feedback of the Learners
7. Glossary used in the Package
8. Providing the Learners with Marks Scored and Time Taken.
9. FAQs Helping Learners to Access the Website.
10. Quiz Providing Important Information Keeping in Mind When Practising Yogasanas.
11. Summary giving the brief information of all corners of the package.

12. Communication Channels & Acknowledgments

Let us know the details of the above steps as follows:-

1. Home Page

All Online tutorial packages start with home page or informative page to provide the basics target of the Investigator or designer. It includes two basic steps viz. E-Learning & Yoga Therapy. E-Learning gives brief information about the importance of Yoga Education through electronic learning for learners and patients. Yoga therapy gives evidence on how online Yoga Education helps learners and patients to control and to cure their problems.

2. Objectives of the study

The objective of this study provides education of yogasanas for people with Diabetes, Asthma and Heart problems. All Learners can also practice regularly to live longer without diseases. From these methods learners with diseases or without diseases can get self-awareness and self-treatment for controlling or nullifying the diseases at their own place. It provides user-friendly e-content, images, pictures, audios, videos and animations with three different access levels: Training, Training and Feedback, Training, Feedback and Guidance.

3. Registration for New User

The new users should enter through this root to access all Asanas, which are related to diseases, by clicking the "New User" button. The user has to fill up all the columns in the Registration Form. Please remember the Username and Password, which the user has given in the Registration Login Page, to avoid considering as a new user.

4. Sign In for Existing User

The old users, who had already registered by using registration form, can access all asanas by giving their username and password, which had been given in the registration login page; in the given text areas by clicking the button "Sign In". Unauthorized or wrong typical entry either in the column of Username or in the column of Password person does not allow to access any Asanas.
5. References for further clarification

This page helps learners who are interested to know more information about e-Learning, yoga and yoga therapy. The user can get more information in their chosen areas by the given references.

6. Feedback of the learners

Feedback helps the designer to improve the e-content and multimedia designing. It may also express the feeling of the learners after learning or practicing yoga through online. Learners’ feedback improves the quality of online teaching learning process.

7. Glossary used in the package

Glossary expands the short form of words used in this course.

8. Providing the Learners with Marks Scored and Time Taken.

This page shows the result of a learner. It provides the time taken for learning Yogasanas and posttest marks of diseases.

9. FAQs Helping Learners to Access the Website.

FAQ helps user to get more information to access the given pages of this website. This page guides learner to access all asanas.

10. Quiz providing important information to keep in mind when practicing Yogasanas.

Quiz gives additional information for learners before and after learning or practicing Yogasanas through e-Learning.

11. Summary giving the brief information of all corners of the package.

Summary describes briefly about all pages given in this course.

12. Contact us; helps learners to contact the Investigator and Research Supervisor.

This page may help users by contacting the Research Supervisor, and the Investigator, from the given address for any purpose related to their academic achievement.

a. Acknowledgement

Acknowledgement indicates the people involved behind the screen for the success of this project.
A Development of Online Instructional Design Model in Yoga Education:

E-Learning or web-based Instructional design model involving five phases, suggested by Lockard (1992), viz. Analysis, Designing, Development, Implementation, and Evaluation, has been adopted in this investigation.

FIGURE 1: DEVELOPMENTAL STAGES OF WEB-BASED SOFTWARE PACKAGES

The ADDIE Model Consists of Five Stages for EIP

PHASE – I: Analysis Phase:

This phase is the most important phase to identify the learning environment and learners requirement. This phase is conducted taking into account the views of subject matter experts, Yoga expert, target learners and objectives of the e-Learning Institution and goals.
Target Groups & E-Instruction

In this Phase, the investigator identified the important target groups. Instructional problems have been identified. Instructional objectives and Content Analysis was determined based on Instructional problems. Required courses, Suitable materials, appropriate media and delivery methods were analysed after careful investigation of target groups and Instructional analysis. The Instructional objectives and content analysis for the three content areas were given in Appendix – 1 and Appendix – 2. E-Learning or online Instructional Package (EIP) was developed using web-based programming languages for the selected content areas. This package was delivered through Internet to the opinion of the target groups and other experts, doing research on e-Learning, Yoga, Yoga Therapy, and Technologists, and as per their suggestion, the e-content was modified carefully.
EIP Construction Analysis

EIP construction analysis includes the basic requirements, which provides necessary information for learners and Instructors, Producing Resources to EIP, Sequential Lesson Flowcharts, Questions and Responses.

Basic Requirements

Basic Requirement includes the objectives of EIP, Guidance of Instructor, Gathering User Profile, and Identify Student Behaviours. Selected unit provides Information in the form of objectives. Materials and Media provide the form of frames. Training Mode of Yoga Instruction is designed based on the Instructional Objectives given in Appendix – 1. Instructors direct the learners to learn and practice Yoga as given methods. The Instructor guides learners to move forward to complete the lesson plan without mistake. Instructors collect information from the learner in the form of User Profile. Based on the given information in User Profiles and selection of the lesson plan, the investigator could identify the entry behaviour of a learner.

Producing Materials and Medias

Producing resources includes delivering e-content materials, and providing suitable learning resources. E-content materials of Yoga Education have been broken into simple and single concepts so as to enable the learners to understand a concept easily. Learning resources were provided in the form of Multimedia tools such as audio, video, animation, still pictures and text.

Reviewing Learners’ Performance and Responses

Review of learners’ performance and responses includes benefits of questions, Question types, Response of the EIP, Immediate response and positive feedback of the Instructor, which improves future performance of the learners. Question keeps the student attentive, encourages to practise regularly, improves knowledge, and Understanding power. The questions of EIP are in the form of Multiple-choice questions. Multiple-choice questions have high economic response. Learners confirm the right answer by clicking the forward text. If the chosen response is right, then the learner gets positive feedback and gets the further content frames. If the chosen option is wrong then the learners go back to read the same concept. It is called Judging Response. Feedback is
based on learners’ response during learning or practising Yoga through EIP. Feedback should provide self-motivation, self-interest, and self-satisfaction.

**Sequencing Lesson Flowchart**

EIP in Yoga Education is given in chronological succession. Sequential lesson plan has described in the following flowchart: -
PHASE – II: Designing Phase:

This phase includes decision of Instructional events, preparing the Instructional Flow Diagram, Developing the Instructional Flow Charts, Designing the User Interface Screen, preparing the Story Board (Appendix 12) for online Yoga Education, and determine the variables used in this study.

Preparing Flow Diagram, User Interface & Story Board

The decision of Instructional events includes learners’ motivation, presenting objectives, delivering materials, guidance for learning, leading the performance, giving feedback, and assessing the achievements. The Investigator carefully adopted these steps during development of the package. The sequences of Instructional contents have been given in the Instructional Flow Diagram (IFD). IFD is given in Appendix – 3. Instructional Flow Chart (IFC) was developed for online Yoga Education. IFC is given in Appendix – 4. Screen Design was developed with Multimedia Interface. An Instructional content contains a concept, an audio, a video, an animation, and a still picture. The Learner can move forward with given text. Once learners enter into a chosen content area, they cannot come out of the screen without complete learning of the specific chosen concepts. Guidance of handing of e-Learning (online) package has been given in the Appendix – 5.
FIGURE: 3 WEB-BASED INSTRUCTIONAL PACKAGES: A DESIGNING PHASE

Preparation Instructional Flow Diagram (IFD)
APPENDIX - 3

Developing Instructional Flow Chart (IFC)
APPENDIX - 4
Materials & Media
Attractive Mastering eyes

Design Responsiveness
Pedagogical Scenarios

Free Complication
Individual Freedom
User Friendly
E-Learning Virus

Designing Graphical User Interface (GUI)

The Graphical User Interface (GUI) acts as an intermediary between a computer program and the user. In other words, a GUI is a collection of techniques and mechanisms that allow the user to interact with the computer program. The main interaction mechanism in a GUI is a pointing device equivalent to the human hand. With the pointing device in the GUI, the user interacts with the elements in the computer program (i.e. objects) by pointing, selecting and manipulating them (Galitz, 1997).

Attractive Materials & Media:

Delivering relevant media and materials should attract the learner’s interest in learning or practising online yoga education. The computer media provides external stimuli in the form of text, pictures, audio, video and animation that gain the attention of the learner’s sensory organs. This information is passed into sensory storage for automatic processing. Sensory storage processes all stimuli in real time, so as new information comes in, it replaces the previous information. Stimuli, or information, that has any value to the learners will be passed along into short-term memory, also known as working memory. Scientists have shown that short-term memory can only hold about
seven to nine items at a time, and these items will be held for only about 30 seconds unless a memory aid is used, such as repetition or chunking. The goal of online training and education is to get relevant information through short-term memory and into long-term memory where it can be accessed later.

Mastering eyes:

The design of the GUI should facilitate the learning process. Therefore, it is very important that a developer looks through the eyes of a layperson instead of looking through his/her own expert eyes while designing a GUI in Online Yoga Education (OYE). Experts tend to think that users automatically perceive and understand all features of OYE by GUI the way they have intended it. Useless confusion at the user's side can be prevented by: avoidance of textual, typographical and graphical ambiguity, consistency, and by provision of a low-risk environment (Johnson, 2000; Van der Harst & Maijers, 1999).

Design Responsiveness:

Responsiveness, the perceived speed of the software, is very important to users. To optimise the responsiveness, it is important that the software provides feedback on what it is doing, when it is busy and when not. Moreover, it should let the user know how much time a certain action will take. The software should enable the users to work in their own pace (Johnson, 2000; Van der Harst & Maijers, 1999).

The statements stated above are applicable to all GUI design regardless of online application. Nevertheless, they are usually meant for software that enables the learner to perform a certain task (e.g. text editors, media editors). Immediate responsiveness motivates learner's interest to achieve their academic goal by improving their learning ability.

Pedagogical Scenarios:

The goal of e-Learning (online) is to allow the user to learn as efficiently as possible. In order to reach this goal, different pedagogical scenarios can be provided. A pedagogical scenario is the range of activities carried out by the learners in order to reach their learning goals. These scenarios are based on pedagogical models, in which theoretical principles and prescriptions from learning theories are stated. The
characteristics of an individual / a learner determine which scenario suits the learning goals best. So a good GUI provides optimal support for each of these pedagogical scenarios.

**Free of Complication:**

The GUI in online education should not make the task more difficult than necessary. A good GUI does not let the user perform unnatural acts, avoids computer and internet jargon and visibility of the Instructional software's internal workings, finds an optimal balance between power, complexity and usability, makes common tasks easy by providing customisation support and wizards and, finally, minimises the need for deductive reasoning in operating the software. This will only distract the learners from their own tasks and goals (Johnson, 2000; Van der Harst & Maijers, 1999).

**Individual Freedom:**

In e-Learning, it is important to facilitate active and independent learning. The learners of online instructional software are responsible for their own learning process. A GUI should therefore respond optimally to the learners’ initiatives.

**User Friendly:**

This is one of the most important guidelines in GUI design for e-learning. A good GUI uses a metaphor that is known to the learners, and that is also suitable for the specific didactic scenario used. Moreover, the metaphor should adhere to the learner’s expectations, and should be adaptive to the learner’s needs. In the next section an example is given in which some of the guidelines stated above are applied.
Variables Used in the Study

A variable is a concept or construct that can vary or have more than one value. There are three variables viz. Dependent Variables, Independent Variables and Intervening Variables, were used in this study. A variables change depending upon the other variables called Dependant Variable. In this study, the Dependent Variable is the achievement of the learner in online Yoga Education. It refers to the achievement of the learners’ post-test scores. Independent Variables do not depend on other variables. In this study, E-Learning Instructional Package (EIP), Training Mode (TM), Training and Feedback (T&F), Training, Feedback and Guidance (TF&G) are Independent Variables. In certain cases, some variables are neither Dependent nor Independent variables. Some variables fall between dependent and independent variables such variables are called Intervening Variables. In this study, the Intervening Variables are Gender, Age, Country, Self-Motivation, Socio-economic Status, Computer Knowledge with Internet access, Fatigue and Scientific attitude. As the study was conducted keeping the instructional materials web-based thrown across the world, the investigator was not having any control over the Intervening Variables cited above.
PHASE – III: Development Phase:

Development Phase includes the development of the Internet based Instructional Package, Implementation of tools and techniques, Preliminary Administration and Revision of the Programme.

FIGURE : 5 WEB-BASED INSTRUCTIONAL PACKAGES:
A DEVELOPMENT PHASE

Yoga based Instructional content has already been developed and designed in such a way that each page / frame has a concept matter. Each concept includes a question for testing of understating the learned concept. Multimedia tools have been included as a part of a concept. Each concept contains audio, video, animation, and still pictures. Web based programming tools and techniques were used for teaching Yoga through online. Small groups were used for pilot study. The investigator observed the problems of the learners during learning and practising yoga through online. The investigator has often discussed with the international user through mails, chatting, video conferencing and audio conferencing for improving the quality of content, media and suitable modification made in Internet programming.
PHASE – IV: Implementation Phase:

The EIP was developed and implemented to the intended population by the Investigator. The investigator has implemented the EIP to the experimental group I, experimental group II and experimental group III. The effectiveness of the online EIP particularly the mastery of e-content, and multimedia, were measured by the Criterion Reference Test (CRT) in Yoga Education by the investigator.

FIGURE 6: WEB-BASED INSTRUCTIONAL PACKAGES:
AN IMPLEMENTATION PHASE

PHASE – IV: Evaluation Phase:

The EIP evaluation includes Content Evaluation, Instructional Resources Evaluation, Domain Evaluation, and EIP Evaluation.
FIGURE: 7 WEB-BASED INSTRUCTIONAL PACKAGES: AN EVALUATION PHASE

Content Evaluation

- Review Teams
- Content
  - Learning Objectives
  - Learning Event
  - Subject Experts
  - E-Content Designers

Instructional

- Further References
  - Appropriate
  - Media Resources
    - Audio References
    - Video Resources
    - Animated Resources
    - Still Picture

Review Teams

- Media Experts
- Instructional Designing Expert
- Psychologists
- Online
- Offline
- Delivering Experts
- Webmasters
- Domain Administrators
- Testing
- Revising
- Project Managers
- Business Experts
Content Evaluation is the evaluation of learning events, requirement of learners' learning contents, and content area. The review team might include learners, subject expert(s), e-content designer(s), and programmer. Instructional Resource evaluation is the step where the metaphors, ideas, animations, graphics, audios, and videos. The review team might include media expert(s), Instructional designing expert(s), and psychologist. Domain evaluation is the analysis of delivering medium, flexibility, speed, accessibility, and security. The review team might include Instructional delivering expert(s), domain administrator, and webmasters. EIP evaluation is the overall Instructional Learning package evaluation, Feedback, and performance evaluation. The review of team might include business experts, programming expert(s), and Subject expert(s).

**VALIDATION OF EIP:**

**Criterion Referenced Test (CRT): Purpose & Use:**

*CRT Purpose:*

The main purpose of Criterion Referenced Test of this study is a measure of achievement of specific knowledge/skills in terms of absolute mastery in online Yoga education. The focus of a CRT is on the performance of an individual as measured against a standard rather than against the performance of others who take the same test; contrasted with the norm referenced test. CRT is used as the posttest in experimental studies to test the effectiveness of the independent variables.

In Online Yoga Education (OYE), CRTs usually are made to determine whether a learner has learned the material taught in OYE course. CRT of OYE would include questions based on what was supposed to be taught in Online Yoga Instructional Events. It would not include other concepts or advanced concepts of Yoga than which was in the Instructional Objectives. All students who took test in OYE could pass, if they were taught well and they studied enough and the test was well made.

CRT is to classify people according to whether or not they are able to perform some task or set of tasks satisfactorily. The tasks are set, and the performances are evaluated. It does not matter in principle whether all the learners are successful, or none of the learners is successful. The tasks are set, and those who perform them satisfactorily 'pass'; those who don't, 'fail'. This means that Online / Distance Learners are encouraged to measure their progress in relation to meaningful criteria, without feeling that, because
they are less able than most of their fellows, they are destined to fail. CRT have two positive virtues: they set meaningful standards in terms of what people can do, which do not change with different groups of candidates, and they motivate students to attain those standards.

CRT: Use

1. To measure the academic achievements of an individual, learner, in the instructional content area.
2. To identify the various levels of academic achievements in different instructional objectives of Yoga Education.
3. To find out the level of instructional achievements of a specific concept.
4. To help the Instructors, Experts, Designers, Developers, Editor and Administrators to improve the performance of the methods and materials.
5. To assist the less academic achievement learners to attain the level of high academic achievement learners.
6. To measure the short-term progress such as chapter / unit / proficiency tests.
7. To provide students and teachers feedback to student progress.
8. To evaluate progress within a country, a state, a district, or in a specific group.
9. To place the concepts better at different levels of academic achievements.
10. It helps in dividing the objectives, events, materials, media, and other resources in terms of academic achievement of the learners.

**TABLE: 6 BLUEPRINT OF THE CRT IN YOGA EDUCATION**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Contents</th>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diabetic Problems</td>
<td>14(1)</td>
<td>8(1)</td>
<td>4(1)</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>Heart Diseases</td>
<td>14(1)</td>
<td>7(1)</td>
<td>7(1)</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Asthma Problems</td>
<td>14(1)</td>
<td>9(1)</td>
<td>5(1)</td>
<td>28</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>TOTAL</strong></td>
<td><strong>42</strong></td>
<td><strong>24</strong></td>
<td><strong>16</strong></td>
<td><strong>82</strong></td>
</tr>
</tbody>
</table>

**Note:** The number of items for each component is given in the Table. The numbers given in the bracket indicate the Weightage given to each item.
EIP DESIGNING & SAMPLING

Experimental Procedure:

Experimental research has had a long tradition in education. The experimental approaches were strengthened by behavioral approaches to education that predominated during the first half of this century. Thus, usage of experimentation in educational technology over the past 40 years has been influenced by developments in theory and research practices within its parent disciplines. We analyze the uses of experimental methods by instructional researchers, extending the analyses of three decades ago by Clark and Snow (1975). Educational Technology includes balancing internal and external validity, using multiple outcome measures to assess learning processes and products, using item responses vs. aggregate scores as dependent variables, reporting effect size as a complement to statistical significance, and media replications vs. media comparisons.

Pure experimental designs are characterized by the ability to randomly assign subjects to different experimental conditions. Moreover, in pure experiments, researchers have a great deal of control over the research groups and the research environment. Abraham and Cracolice (1993-94) identified several pure experimental research designs including pretest-post test design, post only, and Solomon's four-group design. The pretest-post test design is familiar to many. In experimental research, the researcher is generally able to manipulate the research situation or condition, to make causal predictions about the outcome, and to observe the resulting outcome. It is because the researcher has the ability to randomly assign subjects and manipulate the research situation, that he can draw causal inferences about the effect of one variable (i.e., the independent variable) on another variable (i.e., the dependent variable).

Evaluation researchers have recognized the practical difficulties in doing pure experimental evaluation research, and thus the idea of quasi-experimental evaluation research was developed (Campbell & Stanley 1963). Quasi-experimental evaluation research does not meet the experiment requirements and therefore does not exhibit complete internal validity.
Quasi-experimental designs have the same general form as experimental designs including a causal hypothesis and some type of manipulation to compare two or more conditions or groups. However, in quasi-experimental designs researchers have less control over the research environment and do not randomly assign individuals to different research groups. That is, quasi-experimental research does not use random assignment to create equivalent comparison groups from which experimental cause is inferred. Instead, comparisons are made between non-equivalent groups that differ from each other in ways other than the presence or absence of some experimental variable whose effects are being tested. Hence, the experimental method is quite appropriate for the present study. Here, the investigator has control over the independent variable to be manipulated (instructional methods) and to find out the effectiveness of the treatment variable on human behaviour (learning).

Pretest, Posttest and Non-equivalent Groups Design:

Pretest-posttest comparisons, when used in a true experimental design, allow relatively straightforward assessment of a pedagogical or technological intervention by detecting differences in learning outcomes between two points in time – before and after it. It consists of the following simple steps, decided what learning outcomes are of interest, find or create the measures to capture them, randomly assign students to groups, administer the pretest, administer the pedagogical/technological intervention to the experimental group and control or comparison treatment to the other group(s), administer the posttest, and then analyze. A wide variety of pretest-posttest comparison designs are available; however, the ones described below are all true experimental designs in which students are randomly assigned to groups and identical measures are used to assess the learning outcomes of each group.
Here, the investigator is interested in analyzing the effects of three different methods in realizing the instructional objectives in Online Yoga Education. Hence, the researcher needs three groups of learners to work with.

**Three-Group: Experimental Group Design**, which insures all forms of internal validity. In this design, students are randomly assigned to one of three groups (the experimental group I or the experimental group II or the experimental group III), given a pretest, given the treatment (corresponding to the condition to which they were assigned), and then given the posttest (see Figure 8).

- **Comparison 1** shows how the two groups changed in terms of posttest difference or "gain" scores or instructional achievement.
- Treatment (X) was given to a learner with different strategies Viz. Xa, Xb, and Xc.
- **Comparisons 2, 4 & 7** show how the three groups changed from pretest to posttest in terms of difference or "gain" scores or instructional achievement.
Comparisons 1, 5 & 8 show how the three groups changed in terms of posttest difference or "gain" scores or instructional achievement.

Comparison 3 & 6 indicates whether or not the random assignment produced three non-equivalent groups or instructional achievement.

Non-equivalent Control Group Design

The best way to test causal hypotheses with confidence is to compare groups that are created by the researcher through random assignment. This makes it likely that the groups are equivalent at the beginning of the study. However, there are circumstances in which subjects cannot be randomly assigned and therefore, experimental conditions may not be equivalent at the beginning of the study.

Typically, for nonequivalent groups a pretest and posttest measure is taken for each group on the dependent variable and the difference between these two measures is taken as a measure of how each group changed as a result of the manipulation. Because the groups may differ on characteristics other than the variables of interest, it is critically important that the researcher identify, measure, and attempt to rule out extraneous, or confounding, variables.

SAMPLING:

The present study includes 276 learners as sample, representing different parts of the world. The 276 learners need only a computer with Internet facility. The whole sample comprises 276 learners from fifteen countries with different physical, social, economical and environmental background. The website developed as instructional materials as a part of the research work was open to anyone at the international level. Hence, people at their own interest registered themselves as a subject for the study. This being an experimental study, no care has been taken to see that the samples are normal distribution.

EXPERIMENTATION OF EIP:

Administration of Pretest:

Pretest in Online Yoga Education (OYE) was developed and used to all the three experimental groups of 276 learners of this study. Before going to experimentation, the
pretest assessed the existing knowledge of a learner in Yoga Education relevant to three chronic diseases viz. Diabetic problems, Asthma problems and Heart Diseases. The mean and standard deviation on the scores of the pretest for the three experimental groups were computed for analysis. An ANOVA test was also carried out using the pretest scores in order to establish the identity among the three experimental groups with respect to learners’ scholastic achievement in Yoga Education relevant to the three chronic diseases. The pretest had already been administered to all the three groups. A copy of the pretest questions with scoring key is given in the Appendix: 8. The pretest scores obtained from the three experimental groups are given in Appendix: 10.

Experimentation:

This study adopted Pretest, Posttest, Non-equivalent Groups Design. As already stated, three experimental groups includes 276 learners at International level. The groups had been named as Experimental Group-I, Experimental Group – II and Experimental Group – III. Individualised Instruction via online supported with Multimedia Tools and Techniques was adopted in the Experimental Group – I viz. Training Mode. Individualised Instruction via online supported with Feedback, and Multimedia Tools & Techniques was adopted in Experimental Group – II viz. Training and Feedback Mode. Individualised Instruction via online supported with Feedback, Guidance and Multimedia Tools & Techniques were adopted in Experimental Group – III viz. Training, Feedback and Guidance Mode.

Training Mode (TM):

An instruction with Multimedia does not only provide learning materials viz audio, video, animation, still pictures and text but It also has the potential for interesting and involving learners in their learning. This package is specially designed for teaching Yogasanas relevant to the chronic diseases viz. Diabetic problems, Asthma problems and Heart Diseases, through online. In this mode, each concept of the Yogasanas was presented with necessary media tools and techniques. Audio helps attention of visual and non-visual learners. Still images presents clear picture of the position of the Yogasanas during practice. Animation and Video avoid learners’ mistakes during practise. Tutorial Mode of Instruction allows learners to access or practice Yogasanas for a chosen disease. This mode helps repeaters to learn until the learner understands the concept of a particular
Yogasana. Without understanding a concept it would not allow the learners to access to the next content of the same Yogasana.

*Training and Feedback Mode (TF):*

Feedback is an important component in online learning. Feedback draws attention towards Instructional achievement. Instructional feedback is effective in domains with clear right or wrong answers when tested immediately after training. Immediate feedback helps learners to correct their mistake during learning or practising Yoga Education. Immediate feedback provides them to correct their mistakes until completed correctly for the whole task. Such a tool is expected to engage learners actively in knowledge construction that reflects their comprehension and concept of the text. In order to motivate and monitor the learners during learning or practising, the immediate feedback has an important impact on e-Learning. Immediate feedback helps learners to gain high score in online training. Immediate feedback, during online learning, motivates learners to achieve their academic goal in short period with high score. There are several implications from this study. First, the immediacy of feedback appears to have a positive impact on learners’ achievement. Second, the online instructors indirectly tell their online learners to read the concept carefully. Third, the immediate feedback helps learners self-monitoring themselves. Fourth, the immediate feedback encourages to correct and self-regulate them according to their behaviour and Fifth, the immediate feedback improves the learners’ self-confident to attain their academic achievement. In this study, the investigator implemented Training and Feedback as one of the instructional strategies before accessing materials and media of the Yogasanas. This mode helps learners to correct themselves by giving right answer of their wrong understanding of a particular content area. It will encourage learners, if they have understood correctly. Hence, the investigator decided to adopt the Training with Feedback Mode for the Experimental Group – II.

*Training, Feedback and Guidance Mode (TFG):*

Guidance helps the learners to build confidence and to empower individual to get more information or clear the doubts during practice. Guidance also helps to improve the
effectiveness and efficiency of Yoga Education and training. Learners can get the guidance of an instructor through various Internet communication tools viz. chatting, videoconferencing, teleconferencing and discussion groups, to achieve their academic objectives. Hence, this study includes Training, Feedback and Guidance (TFAG) as one of the learning strategies in Online Yoga Education. A learner can choose this mode before accessing the Yogasanas practice. TFAG is working as TAF except the learners can interact with Instructor / facilitator / teacher through asynchronous or synchronous mode with pre-scheduled.

Experimental Group I:

The Experimental Group I comprised of 99 subjects registered from different parts of the world with a break up of 36, 35 and 28 subjects having chosen Asanas curing Diabetes, Heart related problems, and Asthma respectively. The participants of the group were given training online in twelve Yogasanas curing three chronic diseases viz. Diabetes, Asthma and Heart Diseases. As per yoga experts’ opinion, particular Asanas for each disease had been identified. Accordingly the Yogasanas viz. Yogamudra, Padahasthasana, Janusirasana, and Vajrasana were grouped together and studied under “Diabetics”. Similarly, the Yogasanas viz. Ustrasana, Bhujangasana, Dhanurasana and Bastrikasana were grouped together and studied under “Asthma”. Again, Yogasanas viz. Matsyasana, Trikonasana, Vrikshasana, and Simhasana were grouped together and studied under “Heart Diseases”.

The online Yoga practice consisted of text, supported with multimedia viz. Audio, Video, Animation, & Still Pictures in addition to Glossary. The web site had many special features as detailed in the Home Page.

Once a Yogasana was chosen, the learner cannot move to other Yogasanas without completing the same. However, he can move from one Disease to another provided he has completed the Yogasana in hand.

Given a Yogasana, the learner can move from frame to frame in linear fashion duly learning the concept / idea given in a particular frame. Once learnt the concept / idea given in a frame, he would be tested of his learning by means of an evaluation question given in the next frame. If he answers correctly, he can move to the next one. If not, he
has to learn the same content / idea again until he comes out successful in the evaluation test.

The moment a learner had chosen a Yogasana, he has to take up the pretest, which tests his previous knowledge in the given Yogasana. The learner cannot choose the same Yogasana again if he successfully completed the same. When he completes all the four Yogasanas for the given “Disease”, he can take up the posttest, which tests the cognition of the learner in the said Yogasanas.

Once the learner completes all the twelve Yogasanas curing the said “Diseases”, he is entitled to have the feedback of the scores he obtained in the posttest and the time taken to complete the individual Yogasana.

**Experimental Group – II:**

The Experimental Group II comprised of 88 subjects registered from different parts of the world with a break up of 29, 28 and 31 subjects having chosen Asanas curing Diabetes, Heart related problems, and Asthma respectively. The participants of this group were privileged to enjoy all the facilities extended to those of the Experimental Group – I in addition to the feedback, which is given, the moment the learner fails to give a correct answer to every evaluation question.

**Experimental Group – III:**

The Experimental Group III was comprised of 89 subjects registered from different parts of the world with a break up of 27, 29 and 33 subjects having chosen Asanas curing Diabetes, Heart related problems, and Asthma respectively. The participants of this group are more privileged to enjoy all the facilities extended to those of the Experimental Group – II in addition to receiving guidance whenever they need through e-mail, chat, and video & audio conferencing.

The online data collection was done under a period of six months. The instructional achievement obtained by the three groups of the learners in pretest, and posttest were analysed and tabulated using appropriate statistical methods. The formulated hypotheses were also tested using appropriate statistical methods such as ‘t’ test, and ANOVA.
ANALYSIS OF DATA:

The instructional achievement obtained by the three groups of the learners in pretest and posttest were analysed and tabulated using appropriate statistical methods. The formulated hypotheses were also tested using appropriate statistical methods such as 't' test, ANOVA, etc.

CONCLUSION:

The development and validation of EIT in Yoga Education has been discussed in detail in this chapter. Development of CRT, constriction and validation of EIP have also been clearly explained in this chapter. Necessary steps in Experimental procedures and Instructional Process carried out in three experimental groups have been elucidated in this chapter. Analysis and Interpretation of the collected data have been presented in the forthcoming chapters.