CHAPTER III

REVIEW OF RELATED LITERATURE

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REVIEW OF RELATED LITERATURE

The review of related literature forms an important part in any investigation and a thorough knowledge of past research helps an investigator to carry out effective research. It involves the systematic identification, location and analysis of documents which include periodicals, abstracts, reviews, books and other reports of research.

The major purpose of reviewing the literature is to determine what has already been done that relates to the thrust area of the study. According to Good (1973) “a systematic canvas of related literature is the means of determining whether the proposed study unnecessarily duplicates some earlier investigation”. In the field of education, the research worker needs to acquire up-to-date information about what has been thought and done in the particular area from which he intends to take up the problem for research.

The present study is aimed to find the effectiveness of McCormack and Yager Taxonomy in teaching Physics. The studies directly or indirectly related to the topic were collected, classified, organized and presented chronologically under the following sections.

3.1 Studies based on McCormack and Yager Taxonomy
3.2 Studies based on Bloom’s Taxonomy
3.3 Studies based on other taxonomies of educational objectives
The studies and literature reviewed under each section are given below.

3.1 Studies based on McCormack and Yager Taxonomy

Cherif & Verma (2010) conducted a study on effective understanding of the human body organs: a role-playing activity for deep learning. The study explained that in assessing student's performance and understanding, as well as the effectiveness of these activities, McCormack and Yager's taxonomy for science education can be used as a framework for student achievement. In the same study, teachers and instructors can also find useful tools and techniques for monitoring the level of cognitive involvement of the members of a group during the activity.

Yager & Akcay, (2009) conducted a study on comparing Science learning among 4th-, 5th-, and 6th-grade students: STS Versus Textbook-Based Instruction. Fifteen 4th-, 5th-, and 6th-grade teachers from five school districts, each taught two sections of science—one with a Science-Technology-Society (STS) approach and the other with a more traditional textbook approach. The two approaches were evaluated using six different domains: (1) Concept, (2) Process, (3) Application, (4) Creativity, (5) Attitude, and (6) Worldview. The results indicate no difference in results at any grade level in the Concept domain. However,
significant differences in terms of learning were found in the other five
domains.

William (1999) developed Pedagogical Content Knowledge Taxonomies which includes McCormack and Yager Taxonomy. Pedagogical content knowledge (PCK) has been embraced by many of the recent educational reform documents as a way of describing the knowledge possessed by expert teachers. These reform documents have also served as guides for educators to develop models of science teacher development. The General Taxonomy of PCK addresses the distinctions within and between the knowledge bases of various disciplines, science subjects and science topics.

Melear (1995) conducted a study on creativity & inventiveness in science: a reflective course for teachers and other majors. The study explained that McCormack and Yager described a new taxonomy domain in science teaching as imaging and creating which includes visualizing or producing mental images, combining objects and ideas in new ways, producing alternate or unusual uses for objects etc. The study also discussed the way to recognize the teaching of creativity in a classroom with a science/ Technology/Society focus.

The study on A New Taxonomy of Science Education by McCormack & Yager (1989) suggested that there are five domains of science education: knowing and understanding, exploring and
discovering, imagining and creating, feeling and valuing, using and applying, and not just the two domains of content and process which many people view as being science.

McCormack & Yager (1989) conducted a study on assessing teaching/learning successes in multiple domains of Science and Science Education. This study elaborates on the components of five domains of a taxonomy for science educators, for teaching and curriculum development. The domains are information, process, creativity, attitude, and application.

**Studies based on Bloom’s Taxonomy**

Nida & Parveen (2012) looked at the practice of teacher educators in using Taxonomy of Educational Objectives by Bloom, which considers the kinds of cognitive processes students may move through as they learn. The findings show the positive attitude of teacher educators regarding the use of Bloom's Taxonomy for making instructional decisions. The study also recommends the use of Bloom's Taxonomy at a variety of levels and integration of Bloom's Taxonomy with different learning styles.

Ayesha & David (2011) conducted a study on student-content interactions in online courses: the role of question prompts in facilitating higher level engagement with course content. The study examined the relationships among question types and levels and students' subsequent responses/interactions in online discussion forums. Results support the
hypothesis that questions at the higher levels of Bloom’s taxonomy facilitate higher levels of student’s responses. Questions at the “comprehension”, “application”, and “synthesis” levels resulted in the highest average number of student-student sequences.

Matias & Sebastian (2011) explained the progress registered in the use of video games as educational tools and a framework was developed that assists in the design and classroom integration of educational games. The framework addresses both the educational dimension and the ludic dimension. The educational dimension employs Bloom's revised taxonomy to define learning objectives. An evaluation based on pre/post testing found that the game increased the average number of correct answers by students participating in the experiment.

The qualitative study by Rupani & Bhutto (2011) is an attempt to evaluate the existing teaching regarding Bloom’s three domains at secondary school level. Findings revealed that the existing teaching was teacher centered rather than learner-centered. Teaching strategies mostly involved knowledge and rote learning with a little focus on comprehension that is of course the lower level of cognitive domain while the affective and psychomotor domains remained untouched throughout.

The aim of the study by Ari (2011) was to define academic staff’s attitude about Bloom’s Revised Cognitive Taxonomy working in the
Department of Curriculum and Instruction. In accordance with this aim a scale developed by the researcher was applied to the academic staff. Sample of the research consisted of 174 academic staff. Finally, in the research it was defined that Bloom’s Revised Cognitive Taxonomy was useful and applicable according to academic staff.

The goal of the study conducted by Farzana (2010) was to investigate a method in teaching the Revised Taxonomy to support educators in making more accurate use of the taxonomy. The study participants were 123 teacher candidates in four sections of an undergraduate course on classroom assessment. In this study, the two treatment groups received the same instructional information, and the only difference between the two treatment groups was in the types of practice activities. The study results indicated that the two treatment groups did not perform significantly different to each other.

Matthew (2010) explained the integration of career and technical education (CTE) and academic curricular content that capitalizes on natural and inherent connections represents a challenge for CTE professionals. The purpose of this study was to employ Bloom's revised taxonomy to describe the learning objectives. Overall, the findings indicate that the integrating learning objectives that were reviewed tended to be concrete, simple, and have prescribed outcomes.
Danette & Kaleigh (2010) conducted a study on generative learning, quizzing and cognitive learning: an experimental study in the communication classroom. The study tested Wittrock's generative learning model as an explanation for the positive relationship found between quizzing and student performance in a number of studies. Results support the theory, suggesting that quizzes structured to include multiple levels of Bloom, and Krathwohl's (1956) taxonomy, and thereby evoke generative learning, are related to greater cognitive learning.

William (2010) conducted a study on understanding as an educational objective: from seeking and playing with taxonomies to discover and reflect on revelations. The study found the slow rate of progress in education for understanding and argues that the taxonomic approach reverses the relationship between knowledge and understanding. This has contributed to the popularity of disembodied knowledge acquisition at the expense of the development of embodied understanding and higher educational objectives.

David (2010) investigated the relationship between faculty cognitive expectations about learning Chemistry and the construction of exam questions. The study examined chemistry faculty's cognitive expectations about learning chemistry and their influence upon the construction of exam questions in a general chemistry curriculum. The findings suggest that incorporating more conceptual assessment requires
faculty to articulate explicitly their cognitive expectations and integrate them into the writing of learning objectives.

The purpose of the study by Kristel (2010) was to determine whether teachers who developed lessons based on Bloom’s Taxonomy and the Virginia Standards of Learning Curriculum Framework, show increased scores on the mathematics benchmark assessment for fourth grade. Two classes taught by different mathematics teachers participated. The mean of the posttest scores for the experimental group in which the teachers developed lessons using Bloom’s Taxonomy would be significantly higher than the mean of the group which used textbook bound instruction.

Hang (2009) conducted a comparative study of Problem- Based and Lecture- Based learning in Junior Secondary School Science. The purpose of the study was to compare problem based learning (PBL) and lecture-based learning (LBL) in Hong Kong secondary students' science achievement. The results of this study suggest first that PBL is at least as effective as LBL in gaining the knowledge required to achieve the syllabus' learning objectives; secondly, the PBL group shows a significant improvement in students' comprehension and application of knowledge over an extended time.

Leila & Sandra (2009) conducted a study on an evaluation of e-learning on the basis of Bloom's Taxonomy: an exploration. The goal of
the exploratory study was to evaluate e-learning through WebCT on the basis of Bloom's taxonomy. On the basis of analysis of surveys from undergraduate students, the authors determined that individual and instructional factors do not play a major role in the learning process.

Timothy & Elizabeth (2009) explained the use of technology-enhanced coursework by rehabilitation counselor educators. The study proposed that Bloom's (1956) taxonomy of learning domains is used as a paradigm to examine the strengths, limitations, and unknowns of technology-enhanced training as compared to traditional education settings.

Carolyn & Frank (2009) proposed that it is crucial for teachers to communicate effectively about educational objectives to students, colleagues, and others in education. In 1956, Bloom developed a cognitive learning taxonomy to enhance communication between college examiners. The Bloom's Taxonomy consists of 6 hierarchical levels of learning which has endured through different applications and adaptations.

Gunilla (2009) conducted a study on interpretation of standards with Blooms Revised Taxonomy: a comparison of teachers and assessment experts. The study proposes that in education, standards have to be interpreted, for planning of teaching, for development of assessments and for alignment analysis. The results indicate that the
taxonomy is an acceptable tool. The results also indicate that there are differences between the panel composed of teachers and the panel composed of assessment experts.

Narjess (2009) examined the cognitive levels of questions used by Iranian EFL teachers in advanced reading comprehension tests. Twenty teachers were participated in this study and generated 215 questions which were then categorized according to Bloom's taxonomy. The results of this study showed that the most dominant question type was the "knowledge" (54.21%) followed by "comprehension" questions (38.74%). According to the analysis of the study, only 4.19% Iranian EFL teachers-generated questions were directed toward the highest three levels of Bloom's taxonomy, and 95.81% questions were aimed at the three lowest levels of Bloom's taxonomy.

Nussbaum (2009) conducted a study on Multi-dimensional Training system Evaluation using the Revised Bloom’s Taxonomy. The study used the Revised Bloom’s Taxonomy to classify the learning objectives of a training programme. These classified objectives were then examined to predict training performance, and were further compared with trainee reactions. Results indicated that the classified learning objectives were better predictors of training performance than trainee reactions.
A study has been conducted by Renumol & Jayaprakash (2009) to analyze the difficulties of students in programming education. This study analyses the data collected from a group of engineering undergraduates. It has been observed that they have problems in all the three domains of Bloom’s Taxonomy. But majority of their difficulties are in cognitive domain. The results of this study show that all the six levels of cognitive domain specified in Bloom’s Taxonomy are highly significant in programming process. This high cognitive requirement for programming process can be the reason why many students experience it difficult to learn.

Mary Pat (2008) developed the Blooming Biology Tool (BBT), an assessment tool based on Bloom's Taxonomy, to assist science faculty in better aligning their assessments with their teaching activities and to help students enhance their study skills and metacognition. Implementation of the BBT helped them to adjust their teaching to better enhance their student's current mastery of the material, design questions at higher cognitive skills, and assist students in studying for college-level exams and in writing questions at higher levels of Bloom's Taxonomy.

Aijaz Ahmed (2008) conducted a comparative study to evaluate the effectiveness of Computer Assisted Instruction (CAI) versus Class Room Lecture for Computer Science at ICS level. Hypothesis of this research were based on six levels of Bloom's taxonomy as there was one major
hypothesis: There is no significant difference exist for CAI student in gaining a high cognitive achievement than students of same level having Traditional CRL. Findings of this research indicate that total gain in cognitive domain by CAI was significantly superior to the total gain in cognitive domain by CRL teaching method.

Darren (2008) conducted a study on Electronic Delivery of Lectures in the university environment: an empirical comparison of three delivery styles. Results indicated no overall greater efficacy of either delivery style when all question types were taken into account but significantly different delivery-specific results depending on which level of Bloom's taxonomy was assessed. That is, overall, questions assessing knowledge consistently achieved the highest marks followed by analysis, comprehension, evaluation and application. Students receiving traditional lectures scored significantly lower marks for comprehension questions.

Kuruvilla & Mukhopadhyay (2008) in their paper summarizes the outcome of a research work, for evolving a Creative Learning Process (CLP) for engineering studies. The model was aimed at eliminating the limitations of Bloom’s taxonomy and Revised Bloom’s taxonomy in fostering creative thinking and problem solving skills among students. This paper presents one element ‘Diagnostic learning’ and one vignette in detail, for explaining the difficult concept of “mass” to the students. The CLP model evolved after the study was found to be very useful in
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fostering creative talents among engineering students. The vignettes used for the process were beneficial to the teachers as well as students, for evaluation of creative higher order learning domains.

A case study indicated in the paper by Shashi Kumar & Pushpavathi (2008) is a gira system which is gprs based Intranet Remote Administration which monitors and controls the intranet from a mobile device. The paper investigates from this case study that system designing stage in software engineering uses all the six levels of Bloom's Taxonomy. The application of the highest levels of Bloom's Taxonomy such as Synthesis and Evaluation in the design of gira indicates that Software Design in Software Development Life Cycle is a complex and critical cognitive process.

Wendell (2007) conducted a study on the new Bloom's Taxonomy: implications for Music Education. The article introduced the revised Bloom's taxonomy as a tool to translate music education outcomes into objective educational criteria. The author analyzes cognitive processes and knowledge domains that address more complex forms of musicianship using achievement standards from the nine national standards in music education as examples.

David & Jack (2007) discussed a new design for the classic Bloom's Taxonomy developed by Anderson, L. W. & Krathwohl, D. which can be used to evaluate learners' technology-enhanced experience
in more powerful and critical ways. The New Bloom's Taxonomy incorporates contemporary research on learning and human cognition into its model. This updated version of the classic Bloom's Taxonomy emphasizes learners' cognitive processes and points toward technology-enhanced activities.

The study conducted by Lee (2007) employed the Revised Bloom's Taxonomy to enable multidimensional categorization of learning outcomes in a lifting and lowering training programme. The study examined the Revised Bloom's Taxonomy as a novel method of considering the multidimensional nature of learning and provided a potential application of the Revised Bloom's Taxonomy in the training discipline.

The study proposed by Donald (2003) provides an overview of Bloom's taxonomy of educational objectives. A case study is then presented, which explains how the use of the taxonomy was instrumental in the development of graduate-level online instruction and how the taxonomy helped to maintain the congruence among the components of online instruction.

Rodney (2003) suggests that most students approach organic chemistry classes with a certain amount of apprehension and try to just manage or memorize the material rather than understand it. The study recommends the use of Bloom's taxonomy as a way to increase
comprehension and gives an example of how to use it in an organic chemistry classroom.

Leslie (2003) conducted a study approach to learning, the cognitive demands of assessment, and achievement in Physics. The study sought to determine first-year physics student's approaches to learning, the intellectual demands of their exams (using Bloom's taxonomy), and correlations between the approach to learning, assessment demands, and student performance. The results showed that most of the students approached physics with the intention of memorizing formulae rather than understanding concepts, and that this approach correlated with the demands of the exams and students' performance.

Audrey & Linda (2003) conducted a study on activities for differentiated instruction addressing all levels of Bloom's Taxonomy and eight Multiple Intelligence. The study contains 13 curriculum units designed to enhance differentiated instruction for learners with special needs from grades 1-12, including gifted students. It integrates Benjamin S. Bloom's levels of cognitive understanding with Howard Gardner's eight domains of intelligence to provide a framework for individualized instruction.

Athanassiou & Havey (2003) conducted a study on critical thinking in the management classroom: Bloom’s Taxonomy as a learning tool. The study discussed the use of Bloom’s Taxonomy as a metacognitive
framework for the student centered management class. The study surveys thinking within general education and within management education, which draws on Bloom’s Taxonomy, and then describes suggested uses of the Taxonomy.

Ann (2002) asserted that the revised Taxonomy has the potential to provide a common framework and language for connecting current teachers with prospective teachers. The study illustrated how the revised Taxonomy enables participating high school students to acquire a conceptual framework for better understanding teachers and teaching and better communicate with teachers.

Krathwohl (2002) proposed a revision of Bloom's Taxonomy: an overview. The study reviewed the framework of the original Taxonomy of Educational Objectives, a scheme for classifying educational goals, objectives, and standards, describing how the revised Taxonomy differs from the original. The paper discusses the newly developed Taxonomy Table, examining its two dimensions (cognitive processes and knowledge) and illustrating how it can be used to make sense of a variety of educational objectives and standards.

Anderson (2002) in their paper curricular alignment: a re-examination, examines the key differences among content coverage, opportunity to learn, and curriculum alignment and suggested that the revised Taxonomy provides a framework for analyzing curriculum
alignment. The paper also illustrates how the Taxonomy Table can be used to estimate curriculum alignment. The paper notes that the revised Taxonomy enables educators to probe beneath the surface to determine how objectives, activities, and assessments are similar in terms of demands they place on student learning.

Helena (2002) conducted a study on the role of assessment in the Revised Taxonomy. The study examines the assessment implications of the revised Taxonomy of educational objectives, discussing such challenges as finding valid and reliable ways to assess more complex cognitive processes and to assess metacognitive knowledge. The paper illustrates how the revised Taxonomy can be used to evaluate current approaches to assessment and suggest improvements in the area.

The study conducted by Chris (2002) described how the revised Taxonomy was used to plan and implement a co-taught, integrated, thematic unit. The study also examined how statements of objectives, instructional activities, and assessments helped to develop this unit and described three ways that the revised Taxonomy assisted in unit design.

The study conducted by Evelyn (2002) emphasized that higher order thinking skills are of primary concern within mathematics. The study discussed Bloom's Taxonomy, which can create an appropriate format to view the developing levels of higher order thinking skills (HOTS). The results of the study suggested that HOTS can be described
as a composition of content thinking, critical thinking, and creating thinking, and each feature of which offers an emphasis towards a separate level featured within Bloom's Taxonomy.

Qaisar (2001) conducted a study on scholarly teaching--application of Bloom's Taxonomy in Kentucky's classrooms. The study examined the lesson plans of 67 teachers in Kentucky to determine the extent to which their lesson objectives were designed to develop higher order thinking skills in their students. Data analysis found that 41.3% of the new teachers' lesson objectives were at the knowledge level, 3.2% were found to be at the highest level of Bloom's taxonomy, evaluation. 19% of the objectives were at the comprehension level, application, accounted for 16.7%, analysis represented 10.3% and the remaining 9.5% of the objectives were at the synthesis level.

Tony (2001) in his study explained that males and females might respond differently to objective questions aimed at assessing abilities at different levels of Bloom's cognitive domain. Results show only one significant difference in gender performances across the levels of Bloom's Cognitive Domain. This is a female advantage at the level of Analysis. A comparison of mean male and female scores on the three subtest formats also shows only one statistically significant advantage--an advantage for females on the matching questions. This was found to be due to significant female advantages at the Analysis and Synthesis levels.
Katherine (2001) conducted a longitudinal study which combined Stephen Tsuchdi's work a day activities with Bloom's taxonomy of educational objectives to bridge the WAC/WID (writing across the curriculum/writing in the disciplines) divide. Findings suggested strong indications that using Bloom's taxonomy of educational objectives, united with appropriate writing activities, does bridge the WAC-WID divide by providing a general heuristic from which professors can apply selected writing-to-learn and other composition techniques to help students make their way into their disciplines.

Darcy Haag (2000) applies Bloom's Taxonomy of educational objectives to the process of counseling supervision. The study used taxonomy as a means to help supervisors encourage the growth of cognitive complexity in supervisors and also provided examples of supervision questions for each level of the taxonomy.

Christopher (2000) in his study teaching and testing for critical thinking can be a challenge for new and experienced social work educators because critical thinking has no operational definition. Bloom's Taxonomy of Educational Objectives is a tool from the wider context of education that can help new and experienced social work educators to think more precisely about what it means to teach and test for critical thinking.
James (1999) in his study analyzed examination questions and papers in 12 academic departments and seven faculties at a Kenyan state university. The research design coded examination questions and papers using one independent variable and six dependent variables that corresponded to Bloom's taxonomy. The results indicated that most examination questions in this representative state university dwell on lower-order mental processes, although examinations in applied fields had higher-order questions.

Carol (1999) examined how Bloom's Taxonomy can be used by Montessori teacher training. The study focused on the process of becoming a skilled Montessori teacher in the context of the taxonomy and how supervising teachers and training programs can guide student teachers to deeper insights.

Shen (1986) conducted a study which focused on the kinds and purposes of reading assignments, the levels of cognitive processes related to reading assignments, the cognitive ability levels of weak students, the cognitive process levels to be reinforced in ESL remedial reading, and implications for change in the reading program. Results showed that a substantial percentage of students, 21%, were regarded by their teachers as weak, with deficiencies in the four lower levels of Bloom's Taxonomy of educational objectives in the cognitive domain.
Annie (1985) explained the construction of a taxonomy of behavioral objectives for the years three, four, and five. The purpose of the study was that the taxonomy should distinguish what were reasonable objectives for children of differing socioeconomic status levels and ethnic backgrounds. To determine the feasibility of constructing such an empirical taxonomy, the studies were submitted to two kinds of analysis, the first at the close of the abstracting phase and the second at the close of the data summary phase. It can be inferred that research and development activities in early childhood have proceeded much too slowly to keep pace with application demands.

Murphy (1976) explained that the six levels of understanding used to compare the skills of achieving and no achieving readers were taken from the cognitive domain of Bloom's taxonomy of educational objectives. It was concluded that, although achieving and non achieving readers do not differ significantly in their ability to recall information, achieving readers are more able to generalize the select relevant details than non achieving readers.

Alexandria (1973) conducted an investigation on the effects of student performance above the knowledge level (Bloom's taxonomy) as influenced by the use of teacher's questioning strategies. Two parallel forms of an elementary science unit on plants and seeds were constructed. The investigator hypothesized that her lack of significant results may
have been influenced by the stage of cognitive development of the children participating in the study.

Carlton (1973) presents information gained from a study to evaluate the effectiveness of providing students with behavioral objectives, with a secondary purpose of being to evaluate achievement results across the first four levels of Bloom's taxonomy of educational objectives. No significant differences were found between knowledge and comprehension or application and analysis.

3.3 Studies based on other taxonomies of educational objectives

Bhattacharyya (2012) conducted a study on impact of SOLO Taxonomy in computer aided instruction to Qualitative Outcome of Learning (QOL) for Secondary School Children. The study attempted to evaluate the QOL of learners in geometry for secondary school children. The learners are challenged to test their understanding in lessons related to specific topics, rather than just knowing the content. The contents of each topic is based on SOLO taxonomy and is set to test the understanding level of learners with increasing complexity in that topic. The focus of this study is on the change in the QOL, following the use of these three different learning tools employing SOLO taxonomy.

Kiani (2011) conducted a study to evaluate the examination system at grade-v in the Punjab, based on solo taxonomy. The major objectives included are to investigate views of Teachers / Head teachers / AEOs /
Dy. DEOs / DEOs / EDOs about the newly introduced examination system based on SOLO Taxonomy and to analyze students’ performance on an achievement test based on SOLO taxonomy. The majority of the respondents from administrative staff as well as teachers were of the view that they were satisfied with new examination system, that SOLO Taxonomy would increase authenticity of class V examination and increase student’s learning, creative thinking among students and would increase the students’ reading as well as writing skills.

Woollacott (2009) conducted a study on validating the CDIO syllabus for engineering education used the taxonomy of engineering competencies. The study proposed that the CDIO (Conceive-Design-Implement-Operate) syllabus is the most detailed statement on the goals of engineering education currently found in the literature. This study presents an in-depth validation exercise of the CDIO syllabus using the taxonomy of engineering competencies as a validating instrument. The study explained the attributes that make the taxonomy well suited for this purpose.

Burnet (2007) conducted an exploratory study on assessing the structure of learning outcomes from counselling using the SOLO taxonomy. In this study participants' written responses were analysed and classified using the Structure of Learning Outcomes taxonomy. The
results suggested that an expanded SOLO offers a promising and exciting way to view the outcomes of counselling within a learning framework.

Claus & Bettina (2007) in their paper analysed 550 syllabi from the science faculties that had been rewritten to explicitly incorporate course objectives, interpreted as intended learning outcomes (ILOs), using the principles of Constructive Alignment and the SOLO Taxonomy. The paper explained and discussed these principles, give examples of how the new syllabi were constructed, and describe the process by which they were formed. The paper also explained and discussed the results of a comparative study comparing the competences of Computer Science with those of Mathematics.

Marzano & Kendall (2006) explained in their book that Marzano's Taxonomy—the most current and comprehensive guide is a resource for all directors of curriculum and instruction, directors of staff development, principals, and teachers. Marzano's Taxonomy is based on three domains of knowledge: information, mental procedures, and psychomotor procedures; and six levels of processing: retrieval, comprehension, analysis, knowledge utilization, metacognition, and self-system thinking.

The study conducted by Angelina (2003) was grounded on Camp’s piano pedagogy of developing musical intelligence and Marzano’s educational taxonomy on meta-cognition towards independent musical thinking and learning. Eighty-three respondents consisting of music
faculty and music students participated in the investigation. Results of the data from the three research instruments showed that all of the respondents strongly agreed on the educational and pedagogical value of the Music Performance Assessment Tool (MPAT).

The study conducted by Charles & Joe (2002) explored the application of different educational taxonomies in measuring students’ cognitive learning outcomes. The objectives were to compare three educational taxonomies viz., the Structure of the Observed Learning Outcomes (SOLO) taxonomy, Bloom’s taxonomy and reflective thinking measurement model and to test the application value of these taxonomies. It was found that SOLO is suitable for measuring different kinds of learning outcomes.

Allan (1986) proposed a taxonomy of educational objectives which conceptualizes interpersonal skills in terms of measurable behavior. The categories represent six aspects of leadership capability—one of them cognitive (conceptualization), one of them cognitive-affective (evaluation), and four of them cognitive-affective-behavioral (leading, following, role-exchange yielding, and role-exchange asserting). The most significant functional value of the taxonomy is providing a structure for evaluating action learning.
Conclusion

From the foregoing research reviews, it is evident that the area of Taxonomy of educational objectives has been attaining due importance and significance and attracting the attention of educational practitioners all over the world. The scope, the definition and the objectives of the study has been formulated on the basis of the previous research studies. It capacitated the investigator to frame the hypotheses for the study and to develop the tools for the present investigation. The study therefore, attains its credibility on the basis of the reviews, through which the objectives, the hypotheses, the experimental design and statistical interpretations were formulated.