CLASSIFYING LEARNERS BASED ON QUESTIONNARIE STYLE USING BLOOM’S TAXONOMY

S.Geelani Shareef  
sgs.543@gmail.com  
ASCET, Gudur, India

C.Rajendra  
srirajendra.c@gmail.com  
ASCET, Gudur, India

ABSTRACT

In the era of globalization, knowledge becomes necessary. The usage of computers and World Wide Web (WWW) has increased rapidly. So, the users have taken the World Wide Web as a medium and are attracted towards e-learning. The e-learning is an environment in which we can learn through an electronic interface. The e-learning refers to activities that are performed both by individuals or group of people. In order to impart effective and quality e-learning, an instructor needs to have knowledge about learning theories. Learning theory is a model of psychology that explains human responses through the concept of learning, where a model is a mental picture that helps us understand something we cannot see or experience directly. Learning theories are descriptive, describing how learning occurs. Classification of learners plays a vital role in e-learning as it identifies the features and characteristics of learners and we would be able to provide apt e-learning. In this paper, we classify learners in e-learning environment using questionnaire developed based on Bloom's Taxonomy framework. Bloom’s Taxonomy is a classification of learning objectives within an education. It provides an important framework for learners to use to focus on higher order thinking.

1. INTRODUCTION:

Learning can be defined as the process leading to relatively permanent behavioral change or potential behavioral change, which includes both observable activity and internal processes such as thinking, attitudes and emotions. It is important to make note that the learning style of a learner plays a vital role in his/her learning irrespective of learning environment. Learning style models are proposed by many educationists for the purpose of identifying types of learners. For the purpose of classifying learners one need to consider a learning style model.

In order to provide a better classification of learners an instructor should also need the knowledge of learning theories. Learning theory is a model of psychology that explains human responses through the concept of learning, where a model is a mental picture that helps us understand something we cannot see or experience directly. Learning theories are descriptive, describing how learning occurs. There were many learning theories proposed over time. The blooms taxonomy is a multi-tiered model of classifying thinking. The main intent of blooms taxonomy was to develop a method of classification for thinking behaviors that were believed to be important in the process of learning.

2. LEARNING THEORIES:

Learning theory [1] is a model of psychology that explains human responses through the concept of learning, where a model is a mental picture that helps us understand something we cannot see or experience directly. Learning theories are descriptive, describing how learning occurs. The basic learning theories are
Behaviorism: It is based on observable changes in behavior. Behavior refers to the actions and mannerisms made by organisms, systems, or artificial entities in conjunction with their environment, which includes the other systems or organisms around as well as the physical environment. Behaviorism focuses on a new behavioral pattern being repeated until it becomes automatic. Behaviorism is a theory of learning based upon the idea that all behaviors are acquired through conditioning. Conditioning occurs through interaction with the environment.

Cognitivism: It is based on the thought process behind the behavior. Cognitive theory is a learning theory of psychology that attempts to explain human behavior by understanding the thought process. The assumption is that humans are logical beings that make the choices that make most sense to them. Changes in behavior are observed, and used as indicators as to what is happening inside the learner's mind. Information processing is commonly used description of the mental process, comparing the human mind to computer.

Constructivism: It is based on the premise that we all construct our own perspective of the world, through individual experiences and schema. Constructivism focuses on preparing the learner to solve problem in ambiguous situations. Constructivism is the theory that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When learners encounter something new, they reconcile it with previous knowledge and experience. They may change what they believe, or they may discard the new information as irrelevant.

3. LEARNING STYLES:

Learning styles [2] are learners’ preferences in learning. Learning styles are cognitive, affective and psychological traits that determine how a learner interacts and reacts in a learning environment. There are 71 learning styles models were developed, over the past years. Among these models four are the ‘main models’, largely based on their popularity. They are Dunn and Dunn learning style model, Kolb learning style model, Fleming’s VAK/VARK model, Felder-Silverman learning style model. They also sought to establish ‘families’ of learning styles based on common principles and methodologies. Providing a holistic view of learning styles is difficult since there is no common conceptual framework across learning styles models. Although there are some overlapping concepts, there is no direct comparability between models.

DUNN AND DUNN LEARNING STYLE MODEL:

Rita and Kenneth Dunn [3] define Learning Styles as, “The way in which each learner begins to concentrate process and retain new and difficult information. That interaction occurs differently for everyone.” The Dunn and Dunn Model is a comprehensive model that identifies each individual’s strengths and preferences across the full spectrum of five categories.

These five categories have been identified in determining how we learn Environmental: The environmental strand refers to the elements: lighting, sound, temperature, and seating arrangement and so on. Emotional: The emotional strand includes the following elements: motivation, persistence, responsibility, and structure. Sociological: The sociological strand represents elements related to how individuals learn in association with other people: (a) alone (b) with peers (c) in a team (d) an authoritative adult or with an instructor, and (e) learning in a variety of ways or in routine patterns. Physiological: The physiological strand represents elements: perceptual modes (auditory, visual, tactile, and kinesthetic), time-of-day, intake (eating or not while studying) and mobility (sitting still or moving around). Psychological: The elements in this strand correspond to the following types of psychological processing: right brain dominant or left brain dominant, impulsive or reflective, and global versus analytic.
KOLB’S LEARNING STYLE MODEL:
This model represents a learning cycle or spiral where the learner [4] 'touches all the bases', i.e., a cycle of experiencing, reflecting, thinking, and acting. Immediate or concrete experiences lead to observations and reflections. These reflections are then assimilated (absorbed and translated) into abstract concepts with implications for action, which the person can actively test and experiment with, which in turn enable the creation of new experiences which results in learning. Kolb’s model therefore works on two levels - a four-stage cycle:
Concrete Experience - (CE)
Reflective Observation - (RO)
Abstract Conceptualization - (AC)
Active Experimentation - (AE)
And four-type learners:
1. Diverger (feeling and watching – (CE/RO)
2. Assimilator (watching and thinking – (AC/RO)
3. Converger (doing and thinking – (AC/AE)
4. Accommodator (doing and feeling – (CE/AE)

FLEMING’S VARK LEARNING MODEL:
Fleming VARK [2] learning model’s theory was formulated to depict how the different kinds of learners digest data. Fleming improved the VAK model and divided the Visual part into two; the symbolic part that makes up the V and the text part which makes up the R. He also proceeded to augment the auditory and kinesthetic learning part of the VAK model. Fleming VARK learning model’s theory believes that each and every person is inclined to a specific learning style, unconsciously giving preferentiality to one of its four styles. Some persons can have the best performance when something is being presented to them visually. Others rely on the things they hear, some when they are given something to hear, while still others significantly rely on kinesthetic learning style. Hence the learning styles of this model are
i) Visual learners - learns best by seeing and looking at information.
ii) Auditory learners - absorbs information most effectively when hearing and listening.
iii) Kinesthetic learners or tactile learners - learns best through hands-on experience.

FELDER- SILVERMAN LEARNING STYLE MODEL:
Felder-Silverman[5] learning style model (FSLSM) was proposed by Felder and Silverman in 1988. It is a learning style model that is often used in technology enhanced learning but is designed for traditional learning. Most other learning style models classify learners in few groups, whereas Felder and Silverman describe the learning style of a learner in more detail, distinguishing between preferences on four dimensions. Another main issue is that FSLSM is based on tendencies, saying that learners with a high preference for certain behavior can also act sometimes differently. The four dimensions of FSLSM are
1. Active learners/reflective learners.
2. Sensing learners/intuitive learners.
4. Sequential learners/global learners.

4. BLOOM’S TAXONOMY:
Blooms Taxonomy [6][8][14][16][17][19] provides an important framework for learners to focus on higher order thinking. The blooms taxonomy intention was to develop a method of classification for thinking behaviors in the Process of learning, not just to convey information to learners but to encourage their critical thinking and reasoning skills through e-learning. This framework became taxonomy of 3 domains:
- The cognitive - relating to the mental process involved in knowing, learning and understands things.
- The affective – relating to the moods and feelings.
- The Psychomotor – relating to the skills.
4.1 BLOOM’S TAXONOMY OF EDUCATIONAL OBJECTIVES:

Bloom’s Taxonomy [7][6][16][17][19] is a classification of educational objectives used for developing higher level thinking skills shown in below fig (1). It is a process-oriented model that allows instructors to present ideas and concepts at many different levels to meet the needs of a variety of learners. Learning, teaching, identifying Educational goals, and thinking are all complicated concepts interwoven in an intricate web. The main intention was to develop a method of classification for thinking behaviors that were believed to be important in the processes of learning. In 1948, convention of the American Psychological Association led Bloom to spearhead group of educators who eventually undertook this task. Benjamin Bloom formulated a classification of the goals of educational process in establishing educational objectives which is referred as Bloom’s Taxonomy, consisting of three areas viz., the cognitive, psychomotor and affective.

![Fig 1: Hierarchy level of Bloom’s Taxonomy](image)

At the time it was introduced, the term taxonomy was unfamiliar as an education term. Potential users did not understand what it meant, therefore, little attention was given to the original Taxonomy at first. But as readers saw its potential, the framework became widely known and cited, eventually being translated into 22 languages. One of the most frequent uses of the original Taxonomy has been to classify curricular objectives and test items in order to show the breadth, or lack of breadth, of the objectives and items across the spectrum of categories.

4.1.1 The cognitive - knowledge based domain:

Cognitive domain [9][15][20][21] is demonstrated by knowledge recall and the intellectual skills like comprehending information, organizing ideas, analyzing and synthesizing data, applying knowledge, choosing among alternatives in problem solving and evaluation of ideas or actions.

The cognitive learning domain comprised of six levels they are, knowledge, comprehension, application, analysis, synthesis and evaluation. Knowledge consists of defining realities and reminding such as trends, methodologies, principles and theories. Comprehension is the lowest level of understanding of knowledge translation, interpretation and anticipation through simple extrapolation from knowledge. Application is related to generalization and abstraction consists of principles, theories and ideas.

Logical analysis of investigating or probing the obtained knowledge and its synthesis could pave way for reorganization of knowledge to attribute new ideas and concepts. Evaluation brings out benefits of definite objectives of obtained knowledge. Kinesthetic education tendencies are the individual students’ attitude towards learning like interest, emotion, habits, behavior, aptitude, attention, concentration, etc., in pursuing education.

4.1.1.1 Knowledge:

Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range material, from specific facts to complete theories, but all that is required is for the student to bring to mind the appropriate information. Knowledge represents the lowest
level of learning outcomes in the cognitive domain.

**Objectives:** Know common terms, specific facts, methods, procedures, basic concepts, principles.

**Verbs for expressing learning outcomes:** define, describe, identify, label, list, match, name, recall, and select.

4.1.1.2 Comprehension:

Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.

Three forms of comprehension are described in the taxonomy: translation, interpretation, and extrapolation. Translation involves encoding incoming information into some form other than that in which it was received. For example, students would be engaged in translation if they summarized in their own words the information contained in a film on the formation of a tornado. Whereas translation involves the identification of the literal structure underlying the incoming information, interpretation “may require a reordering of ideas into a new configuration in the mind”. Finally, extrapolation goes beyond the literal level of comprehension. It involves inferences and predictions based on literal information in the communication and principles and generalizations already possessed by the learner.

**Objectives:** Understand facts and principles. Interpret verbal material, charts, and graphs. Translate verbal material to mathematical formulas. Estimate future consequences implied by data. Justify method and procedures.

**Verbs for expressing learning outcomes:** convert, defend, distinguish, estimate, explain, infer, paraphrase, predict, rewrite, summarize.

4.1.1.3 Application:

Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

**Objectives:** Apply concepts and principles to new situations. Apply laws and theories to practical situations. Solve mathematical problems. Construct charts and graphs.

**Verbs for expressing learning outcomes:** change, compute, demonstrate, discover, manipulate, prepare, produce, relate, show, use.

4.1.1.4 Analysis:

Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

**Objectives:** Recognize unstated assumptions and logical fallacies in reasoning. Distinguish between facts and inferences. Evaluate the relevancy of data. Analyze the organizational structure of a work.

**Verbs for expressing learning outcomes:** break down, diagram, differentiate, discriminate, distinguish, outline, point out, relate, select, separate, and subdivide.

4.1.1.5 Synthesis:

Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns of structures Integrate.
Objectives: Write a well-organized theme or give a well-organized speech. Propose a plan or create a new work or writing, music, art. Integrate learning from different areas into a plan to solve new problems. Formulate or develop new schemes for classifying.

**Verbs for expressing learning outcomes:** compile, compose, create, devise, design, generate, modify, organize, plan, rearrange, reconstruct, relate, revise, rewrite, write.

4.1.1.6 Evaluation:

Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose), and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.

Objectives: Judge the logical consistency, the adequacy of conclusions, the value of a work by use of internal criteria, the value of a work by use of external standards.

**Verbs for expressing learning outcomes:** appraise, compare, conclude, contrast, critique, justify, interpret, relate, support.

4.2.2 The affective - attitudinal based domain.

Affective domain [10] is demonstrated by behaviors indicating attitudes, awareness, interest, attention, concern, responsibility, ability to listen, inter-personal skills, intra personal skills, etc. This domain relates to aptitude appreciations, emotions, sentiments, values such as enjoying, conserving, respecting and supporting, assisting, helping etc. The five major categories listed the simplest behavior to the most complex includes receiving, responding, valuing, organizing and characterizing.

4.2.2.1. Receiving:

Receiving refers to the student's willingness to attend to particular phenomena of stimuli (classroom activities, textbook, music, etc.). From a teaching standpoint, it is concerned with getting, holding, and directing the student's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.

Objectives: Listen, show sensitivity, accept differences, attend, closely.

**Verbs for expressing learning outcomes:** ask, choose, describe, follow, give, hold, identify, reply, select, use.

4.2.2.2 Responding:

Responding refers to active participation on the part of the student. At this level he or she not only attends to a particular phenomenon but also reacts to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). The higher levels of this category include those instructional objectives that are commonly classified under "interest"; that is, those that stress the seeking out and enjoyment of particular activities.

Objectives: Obey rules, complete expectations, participate, volunteer, show interest, enjoy.

**Verbs for expressing learning outcomes:** assist, conform, greet, help, perform, present, read, select, tell, and write.

4.2.2.3 Valuing:

Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. This ranges in degree from the simpler acceptance of a value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalization of a set of specified values, but clues to these values are expressed in the student's overt behavior. Learning outcomes in this area are concerned with behavior that is consistent and stable enough to make the value
clearly identifiable. Instructional objectives that are commonly classified under "attitudes" and "appreciation" would fall into this category.

Objectives: Demonstrate belief in, appreciate, show concern, demonstrate problem-solving attitude, demonstrate commitment.

Verbs for expressing learning outcomes: complete, explain, follow, form, initiate, invite, join, justify, propose, and share.

4.2.2.4 Organization:

Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving human relations) or with the organization of a value system (develops a vocational plan that satisfies his or her need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.

Objectives: Recognize need for balance, recognize role of systematic planning in problem solving, accept responsibility, accept own strengths and limitations, formulate plan for harmony with others.

Verbs for expressing learning outcomes: adhere, alter, arrange, combine, generalize, identify, integrate, modify, order, organize, prepare, relate, synthesize.

4.2.2.5 Characterization:

Characterization by a value or value set. The individual has a value system that has controlled his or her behavior for a sufficiently long time for him or her to develop a characteristic "life-style."

Objectives: Display safety consciousness, demonstrate self-reliance, practice cooperation and Interdependence, show objectivity in problem solving, demonstrates punctuality and self-discipline.

Verbs for expressing learning outcomes: act, display, influence, listen, modify, perform, practice, propose, qualify, question, serve, solve, use, verify.

4.2.3 The Psychomotor-skills based domain.

Psychomotor domain [11][18] focuses on physical and kinesthetic skills, which is characterized by progressive levels of behaviors from observation to mastery of physical skill. Its learning is demonstrated by physical skills viz., coordination, dexterity, manipulation, grace, strength, speed, grasping and talent in use of precision instruments or tools. The domain levels comprise perception, set, guided response, mechanism, complex or overt response and adaptation.

4.2.3.1 Observe:

In observe process we can translate sensory input into physical tasks or activities.

Verbs for expressing learning outcomes: Identify, Observe, See, Smell, Taste, Touch, and Watch.

4.2.3.2 Model:

In model process we are able to replicate a fundamental skill or task.

Verbs for expressing learning outcomes: Attempt, Copy, Follow, Imitate, Mimic, Model, Reenact, Repeat, Reproduce, Show, Try.

4.2.3.3 Recognize Standards:

Here we recognize standards or criteria important to perform a skill or task correctly.

Verbs for expressing learning outcomes: Check, Detect, Discriminate, Differentiate, Distinguish, Notice, Perceive, Recognize, Select.

4.2.3.4 Correct:

Here we use standards to evaluate their own performances and make corrections.

Verbs for expressing learning outcomes: Adapt, Adjust, Alter, Change, Correct, Customize, Develop, Improve, Manipulate, Modify, Practice, and Revise.

4.2.3.5 Apply:

We apply the skill to real life situations.

Verbs for expressing learning outcomes: Build, Compose, Construct, Create, Design, Originate, Produce.
4.2.3.6 Coach:
We are able to instruct or train others to perform this skill in other situations.

*Verbs for expressing learning outcomes:* Exhibit, Illustrate, Instruct, Teach, and Train.

Here we use a cognitive domain [9], which is relating to the mental process involved in knowing, learning and understands things. In the cognitive domain we have six levels, they are

- **Knowledge:** Exhibits memory of previously learned material by recalling fundamentals facts, terms, basic concepts.
- **Comprehension:** Demonstrate an understanding of the facts.
- **Application:** Apply knowledge to actual situations.
- **Analysis:** Break down objects or ideas into simpler parts and find evidence to support generalizations
- **Synthesis:** Compile component ideas into a new whole or propose alternative solutions.
- **Evaluation:** Make and defend judgments based on internal evidence or external criteria. Based on the cognitive domain of levels, we have put together some questions with respect to definition and using some keywords. Some of the sample questions in questionnaire style [2, 9] are,

**Knowledge:**
- What is a variable?
- List different types of data types?
- When arrays are used?
- Define a FILE?
- How to choose particular control statements for a program?

**Comprehension:**
- Classify the functions into different categories?
- Summarize difference types of functions?
- Translate the given algorithm into C program?
- Compare structures and unions?
- Compare and contrast variable and constant?

**Application:**
- Apply recursive function to solve “Towers of Hanoi “problem?
- Identify the exit loop in C?
- Select a data type to store the data into the variable ‘emp_num’?
- Build a simple program to find the grade of a student?
- Develop a C program using return statement?

**Analysis:**
- Analyze the parameters passing techniques?
- Divide a function into multiple sub-functions to simplify the program?
- Simplify program using control statements?
- Test for palindrome in the given numbers?
- Distinguish Call by Value and Call by Reference?

**Synthesis:**
- Minimize the number of lines in a program?
- Create a student database using structures
- Create a linear list using arrays?
- Delete the least element from the given list using arrays?
- Test for greatest number along three numbers in C?

**Evaluation:**
- Determine the area of a circle using functions?
- C is a middle level language. Justify?
- Prove ‘switch’ is better than ‘Nested-If’ statement when number of conditions are more in the program?
- Decide whether ‘5’ is even or odd using IF condition?
- Mark the correct statement from the following
  a) a==b; b) a=b; c) a+b=c; d) c= a+b

We have choose ‘C’ language and prepared some questions based on cognitive domain levels i.e. Based on **knowledge** we have built some questions, like wise based on **comprehension, application, analysis, synthesis** and **evaluation** levels we prepared questions. So we have to know the levels of the learners i.e. under which level particular learner may come. Once we classify the thinking levels of the learners, so we can easily provide the specific material to the specific learner based on that level.
5. RESULTS AND ANALYSIS

The Scrutiny process consists of four steps. These steps imply the usage of the Weka Explorer application [12]. The first step is to prepare a training dataset from the set of learners based on the marks secured by them in the test. The test consists of questions according to Blooms taxonomy. The second step is to feed the training dataset to WEKA. The third step is to select the MLP [13] module in WEKA and choose the proper features. Once the test options are selected, the results are obtained. The final step is to have an understanding and usage of the results.

@relation train
@attribute Rollno{11g21d5801,11g21d5802,11g21d5803,11g21d5804,11g21d5805,11g21d5806,11g21d5807,11g21d5808,11g21d5809,11g21d5810}
@attribute k1 numeric
@attribute k2 numeric
@attribute k3 numeric
@attribute k4 numeric
@attribute k5 numeric
@attribute c1 numeric
@attribute c2 numeric
@attribute c3 numeric
@attribute c4 numeric
@attribute c5 numeric
@attribute a1 numeric
@attribute a2 numeric
@attribute a3 numeric
@attribute a4 numeric
@attribute a5 numeric
@attribute an1 numeric
@attribute an2 numeric
@attribute an3 numeric
@attribute an4 numeric
@attribute an5 numeric
@attribute s1 numeric
@attribute s2 numeric
@attribute s3 numeric
@attribute s4 numeric
@attribute s5 numeric
@attribute e1 numeric
@attribute e2 numeric

The last attribute represents the class where each student is placed in the input dataset. The class attribute has three values: belowavg, avg and good.

A sample of the data section from the arff file is presented below.

@data
11g21d5801,1,0,1,0,1,2,0,1,2,0,0,1,3,0,1,2,1,0,0,1,4,2,1,0,5,1,3,5,6,0,avg
11g21d5803,1,0,1,0,1,2,1,1,2,3,1,0,0,0,1,1,1,1,3,2,3,5,1,2,3,4,5,avg
11g21d5804,1,1,1,0,2,1,2,1,2,3,3,3,2,1,4,3,2,1,4,5,4,3,2,0,5,4,4,3,2,good
11g21d5805,1,1,1,1,2,2,2,2,1,3,3,3,3,1,4,4,4,2,3,5,4,4,4,2,6,6,6,3,2,good
11g21d5806,0,0,1,1,2,2,3,1,1,3,2,1,3,2,4,2,2,2,2,5,4,3,2,1,5,4,3,2,1,belowavg

Each line in the data represents learner’s marks for each question based on the weightage of those questions. We can classify the learner based on this data. It means the learner is belowavg or avg or good in that subject.

We can run the above data in the weka workbench, the run information are as follows,
6. CONCLUSION

Education is the mission of the human race and progressive, successful technical and professional education should lead a student to achieve learning objectives with cognitive concepts so that education could assist and help with career development and also to help students lead life with success by possessing the required competencies. Bloom’s taxonomy offers guidance in pursuing professional education with cognition to attain the competency and developing talent, capability, capacity, skills and other traits to become dynamic and innovative in their pursuits. By using blooms taxonomy, we can estimate the level of understanding and capability of learners with respect to the domains. It suggest the e-content developers how to develop the content to specific e-learner, we can also create the interest in learner and improve more engagement in learning.

7. REFERENCES


