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Teaching Colon Classification Using Revised Bloom's Taxonomy: Teachers' Strategy

Saravanan T
Annamalai University, sarlib@live.in

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Saravanan,T.

Associate Professor, Department of Library and Information Science, Annamalai University, Tamilnadu, India. **E-mail**: sarlib@live.in / tsarlib@gmail.com
ORCID ID: https://orcid.org/0000-0003-0123-6210

Abstract

The strategy to teach the subject Colon Classification using Revised Bloom's Taxonomy levels (Anderson,L.W., & Krathwohl, D.R., 2001) is unpacked here. Though Library and Information Science Teachers teach the Colon Classification using S.R.Ranganathan's Steps in Classification (0-7 successive steps and 1 final step) in the class rooms to shape the classification skills of the students, the six levels of Revised Bloom's Taxonomy make the teachers' job easier and also help the students to learn them without much burdens. This paper unpacks the experience and teaching strategy of the teacher, who teaches the Colon Classification Scheme (6th edition) [Course Code:19LISC202; Course Name: Colon Classification-Practical] using the Revised Bloom's Taxonomy in the Department of Library and Information Science, Annamalai University, Tamilnadu, India. A few worked out exercises have been briefed using the Revised Bloom's Taxonomy. Further, one sample exercise performed by the students, who had learned the concepts using the Revised Bloom's Taxonomy in the class room also explored here. This paper is centered on teaching the Colon Classification Practice in the class room using the Revised Bloom's Taxonomy only and doesn't unpack the fundamentals and six levels related action verbs of Revised Bloom's Taxonomy.

Keywords: library science, colon classification, revised blooms taxonomy, teaching, learning

Introduction:

Library and Information Science community, who are keen to develop their skills in Colon Classification Scheme, should go in depth and slice the concepts associated with the said Classification. Their teaching/learning capabilities must be self-evaluated by themselves so as they can go through the Classification techniques using various levels of Revised Bloom's Taxonomy *(Anderson,L.W., & Krathwohl, D.R., 2001)*. Before igniting the process of Classification using the levels, one should be able to answer the given self-evaluating questions that may help to realize, where actually they are, and what levels of Revised Bloom's Taxonomy that they shall have to opt. The given questions can be viewed from the teachers' and learners' perspective:

> *Do I know the fundamental concepts of Colon Classification?*
> *Do I have enough experience in using all the steps in Colon Classification?*
> *Have I learned the Revised Bloom's Taxonomy levels?*
> *Did I understand the Revised Bloom's Taxonomy skills ordering levels?*
> *Am I clear about the Revised Bloom's Taxonomy levels and their usage?*
> *Did I make myself clear about the Revised Bloom's Taxonomy level, which I should go through?*

The classification process may be commenced, if the answer is positive else, the Teachers/Learners should have to make themselves stable. The questions, where the negative answer is traced, should be given more weightage and the skills in those fields need to be raised.

Revised Bloom's Taxonomy: An Outline

In the year 1956, Benjamin Bloom, an educational Psychologist from the University of Chicago initiated the Bloom's Taxonomy. Bloom's Taxonomy helps the teachers to design the learning objectives effectively for their courses (Ishabatu, 2018). Now, it has been updated with the six levels namely Remembering, Understanding, Applying, Analyzing, Evaluating and Creating *(Anderson,L.W., & Krathwohl, D.R., 2001).*

Objectives:

The present study is focused on teaching techniques of Colon Classification Practice in the class room using Revised Bloom's Taxonomy. The teaching experience of the teacher and the challenges faced by the students are focused. Model learning objectives along with the action verbs applied questions also have been focused here. Study led the author to screen the outcomes and make a few suggestions for the teaching/learning community.

Research Design:

The Revised Bloom's Taxonomy levels are acting as a tool to teach the Colon Classification Practice in the class room. To fulfil the objectives, a few titles are vouched here. The teacher's and student's experiences also depicted here along with the exercises for better understanding.

Edge:

Colon Classification [6th.Ed.] teaching techniques using the six levels of Revised Bloom's Taxonomy only have been focused here. Study doesn't cover any other Classification schemes. This paper doesn't brief the Revised Bloom's Taxonomy related concepts in depth. To acquire more details about the Revised Bloom's Taxonomy related concepts, the readers may look around the related reference sources. Four sample titles have been vouched here for better picture. The Revised Bloom's Taxonomy levels' wise discussions are associated with the given four titles only. Colon Classification techniques discussed here are associated with the given four titles only. The levels' wise discussions and the Colon Classification concepts need more care that depends on the titles selected for teaching. The sample titles are;

Sl.No.	Titles	Description
1.	*Difference Between Analytical Chemistry and Extractive Chemistry*	*Teaching*
2.	*Saradhaiyin Thanthiram*	*Teaching*
3.	*Quantitative Analysis of Silver in an Alloy*	*Teaching*
4.	*Distribution of Prime Number*	*Students' Practice*

Invoking Classification

Dr.S.R.Ranganathan (1960) has developed 8 successive steps ranging from 0-7 and one more step to verify the result in the final (Step-8) to process the document titles. The steps in classification let us to transfer the natural language to the artificial language of ordinal numbers.

They are;

Step-0	Raw Title
Step-1	Full Title
Step-2	Kernel Terms

Step-3	Analysed Title
Step-4	Transformed Title
Step-5	Title in Standard Terms
Step-6	Title in Facet Numbers
Step-7	Class Number
Step-8	Verify (optional)

(This paper sticks to the Colon Classification 6th Edition (1960). The Step-1 "Full Title" is named as "Expressive Title" in Prolegomena to Library Classification, Ed.3. 1967. Readers of this paper should stay away from the terminology related confusions.)

The above Classification steps can be taught in the classroom using the Revised Bloom's Taxonomy levels (Anderson,L.W., & Krathwohl, D.R., 2001) in order to make the students skilled in the subject related concepts. The way the teacher handled the topics in the classroom may let the learners to learn the concepts behind the steps in classification without complications. As explained, the six levels are;

- ➢ *Remember*
- ➢ *Understand*
- ➢ *Apply*
- ➢ *Analyze*
- ➢ *Evaluate and*
- ➢ *Create*

Note: All the levels structured here are associated with the exercises 1-4 only. Topics coverage in the levels may differ that depends on the class room exercises. Restructuring the levels are essential when we face the different titles. So, the discussion in the levels can't be generalized mechanically. Teachers should keep those things in their mind while framing the learning objectives.

Level-1: Remember

This level helps the learners to recollect the concepts of all the steps spanning from 0 to 8, where the techniques need to be recited by the learners. Revised Bloom's Taxonomy says that if the learners are able to understand the concepts, which they have learned in the classroom they may easily recite those items. Hence, the teacher should take necessary steps to trigger the skills of the students to recite the postulates and principles, phase relation-Intra Facet relation, and all the steps associated with the classification.

Postulates and Principles
Phase Relations:
    Intra facet relation:
        Bias, Difference
Notations
Steps in Classification and
Rules.

The exercise-1, which is rendered in this paper demands the said areas related skills from the students. At the beginner level the students may not be aware of the required topics to recite. But a teacher is always familiar with the topics, which need to be recited. Since the given Exercise-1 in this paper demands the Phase Relations related basics, it is essential for the students to recite the same. In the previous class the same should have been taught by the teachers. The lesson plan would help the teachers to fix the border line for the topics and the discussions. Hence, it would be the responsibility of the teachers to restrict the topic recollection so as they can fulfil the demands of the six levels of Revised Bloom's Taxonomy. Further, the students also would not be deviated from the current topic. In real time, what kind of difficulties would be faced by the teachers and students? The difficulties can't be predicted at the initial stage. Learners' learning skills usually differ from each and every one. So, enough time is required to judge the learning skills of the learners. The teacher's capability may help to trace the learners' learning capabilities and also to fix the timeline to teach the topics based on the learners' learning speed. *(Annexure-i is given for illustrative purposes only.)*

Note: In this level, the given topics related objectives need to be prepared. By the end of this lesson, the students may be able to recollect the given classification related topics. Reciting the concepts need to be limited based on the topic discussions in the class room. For instance, here the students have been asked to recollect the following topics.

Level-2: Understand

As said, without understanding there would be no way to recite any subject related concepts. The duty of the teacher is to make the students understand the topics clearly so that they can recollect the Colon Classification related concepts as and when required. It would be clear that the *Levels-1 and 2* should encompass the relevant topics associated with the Colon Classification. Each student of the class should be asked to explain the Postulates and Principles, Phase Relations-Intra Facet Relation-Nature of relation, Connecting Symbol (CS), representing digit, steps spanning from 0 to 8, and the Rules (*if warranted*). If their understanding level is good, the remembering level may help them to explain everything.

Note: In this level, the said topics related objectives need to be prepared. By the end of this lesson, the students may be able to describe the classification related topics, which have been recalled in Level-1. The students should explain the topics in their own words. The topics coverage usually differs when a teacher selects some other type of titles.

Level-3: Apply

The level three may be crossed when the requirements of *Levels-1* and *2* are successfully fulfilled by the students. The *Level-2 understand* makes them use the level *apply* for the given titles using the Colon Classification

techniques. Here, the students should keep in their mind that they must be strong in the level *understand* before they get into the *Level-3*.

Level-4: Analyse

Once the students have gained the familiarity in the level "*apply*", they can start the *Level-4 analyse*. The techniques of classification applied using the *Level-3* need to be *analysed* carefully so that the students can move to the next level. Here, the students should keep in their mind that they must strong in the level *apply* before getting into the fourth level.

Note: In this level, the said topics related objectives need to be break down into various parts. By the end of this lesson, the *students may be able to break the given titles into various parts using the Colon Classification techniques in order to trace the class numbers.*

Level-5: Evaluate

The fifth level helps students to go through their tasks whatever they have accomplished in level four. Evaluation helps them to make sure about their classification process and the outcomes obtained using the all the steps in the fourth level. *Evaluation* level lets the students to find and fix the errors if anything occurred in order to make the judgements. Here, the students should keep in their mind that they must be strong in the level *analyse* before get into the level five.

Note: In this level, the said topics related objectives need to be prepared. By the end of this lesson, the *students may be able to make justifications for the jobs done by them. Here, the class numbers, which have been traced by them using the Colon Classification techniques need to be evaluated. Evaluation level lets them make the valid decisions.*

Level-6: Create

This level shapes and sharpens the skills of the students, who used the above five levels of Revised Bloom's Taxonomy to learn the Postulates and Principles, Phase Relations-Intra Facet Relation- Nature of relation, Connecting Symbol (CS), representing digit, Rules and Steps in classification for creating the class number.

Note: In this level, the said topics related objectives need to be prepared. By the end of this lesson, the *students may be able to finalize the works, which are associated with the class number construction for the given titles.*

The level-based skills order is inclining from remember to create. *Remembering* and *understanding* are categorized under lower order skills and the remaining 4 levels fall under the higher order skills. According to Ishabatu (2018), the levels need to be approached as shown below:

Before *understanding* a concept, one must be strong in the level *remember*
Before *applying* a concept, one must be strong in the level *understand*
Before *analysing*, one must be strong in the level *apply*
Before *evaluation process*, one must be strong in the level *analyse*
Before *creation*, one must be strong in the level *evaluation*

Further, Ishabatu explained that the level of the learners needs to be kept in the mind. If the students are freshman, the lower order skills may be considered. If they are strong in the fundamentals, they should not have some objectives related to remembering and understanding. So, the teachers can decide the teaching objectives levels depending on students' learning skills.

Let us look around the teaching strategy opted to teach the Colon Classification Practice to the students by using S.R.Ranganathan's Colon Classification techniques towards Revised Bloom's Taxonomy.

Class Room Activities:

Teaching Strategy

Exercise-1: Difference between analytical chemistry and extractive chemistry
Classification Scheme: Colon Classification [6th Ed.] by Dr.S.R.Ranganathan.

Level-1: Remember

Students should be asked to recite the concepts related to the given topics.

Postulates and Principles;
Phase Relations-Intra facet relation- Bias, Difference
Notations and
Steps in Classification.

Role of Teacher: *Class Teacher should make the students strong in the basics of Colon Classification to fulfil the demands of this level. Class Teacher should confirm the students' reciting level here. If the students are found with lack of remembering, they should be directed to go through the level again. They shouldn't be permitted to enter into the Level-2 unless they are strong in the Level-1.*

Level-2: Understand

Students should explain the concepts related to the given topics in their own words so that the teacher can take them to the next level. If they are able to explain the concepts clearly, they may easily recollect the *Level-1*. So, *Level-2* helps the learners to recite the *Level-1*. Without understanding the subject concepts, the level *"remember"* is not possible. The level *"understand"*

helps to *recollect* the topics that the students learnt in the previous class. If they are able to recollect everything, their understanding is also good.

Postulate of Basic Subject: *[Prolegomena.CR32 p.83]*
    A Subject without any isolate idea as a component.
Postulate of Fundamental Categories: *[Prolegomena.RB1 p.399]*

    There are five and only five fundamental categories namely- Time, Space, Energy, Matter, and Personality.

Connecting Symbols: *[CC 6th Ed. p.1.25]*

Fundamental Category (FC)	Connecting Symbol (CS)	Description	Symbol for the Facet
Time	'	Single Inverted Comma	[T]
Space	.	Dot	[S]
Energy	:	Colon	[E]
Matter	;	Semicolon	[M]
Personality	,	Comma	[P]

Postulate of Isolate Facet:

    Each division in a Facet may be referred as Isolate Focus or simply an Isolate. [CC 6th Ed. p.1.22]. Each Isolate Facet of a compound subject can be deemed to be a manifestation of one and only one of the five fundamental categories. [Prolegomena.RD1 p.403]

Postulate of Rounds and Levels for all categories: *[Prolegomena. RH p.410, RJ p.411]*
    Sample Rounds and Levels are as shown below.

    Rounds: *The fundamental categories may manifest itself in one and the same subject more than once.*

        [1P]   = Round 1 Personality Facet
        [2P]   = Round 2 Personality Facet
        [1E]   = Round 1 Energy Facet

    Levels: *The fundamental categories other than Energy Facet may manifest themselves more than once in one and the same round within a subject.*

        [P1]   = Level 1 Personality Facet
        [P2]   = Level 2 Personality Facet

    Rounds and Levels:

        [1P1]   = Round 1 Level 1 Personality Facet
        [2P2]   = Round 2 Level 2 Personality Facet
Postulate of Sequence: *[Prolegomena. RK p.412]*

All the facets should be arranged in a helpful sequence. The Basic Facet of a compound subject should be in the First Place. As per the Postulate of Concreteness, the fundamental categories should be arranged based on their decreasing concreteness like P, M, E, S, and T.

Wall-Picture Principle: *[Prolegomena. RK p.412]*

Imagine that a Wall is identified by an alphabet A and a Picture is represented by an alphabet B. No one can draw a picture unless a wall exists. Here, the concept B will not be operative unless the concept A is conceded. The Facets depend on each other. The facet A should precede the facet B.

For instance, you are aware that Blood Pressure levels may be elevated due to one of the factors Overweight. Here, the concepts Blood pressure and Overweight can be sequenced using this principle. The concept Blood Pressure will not be operative unless the concept Overweight is conceded. Here the concept Overweight precedes the concept Blood Pressure.

Phase Relations: *[CC 6th Ed. p.1.55, p.2.28]*

The Phase relations include 3 levels and each level consists of 5 phase relations. The availability of MC or any of its subclasses, ie if it is a BC or a CdC in a subject is referred to as One-Phased. A subject is Two-Phased if it brings into relation two BC or two CdC or a BC or a CdC.

The phase relation should be represented by a Roman Small. The Connecting Symbol is 0 (zero) and an appropriate digit should represent the phase relation.

  Intra-Facet Relation:

   It is possible to have books expounding the relation between the two isolates in one and the same facet of a class.

   Difference: [Nature of Relation]

   Represented by Roman Small **n**

Notations: *[Prolegomena. HC 916 p.242]*

Colon Classification adopts 10 Indo-Arabic numerals, 24 Roman caps (excluding I and O other than the Main Class), 23 Roman smalls (excluding i, l and o), Punctuation marks and Arrows, Circular Brackets, and equal sign.

Classification Steps 0-8: *[CC 6th Ed. p.1.7]*

Step-0: Raw Title
Raw Title can be collected from the document.
Step-1: Full Title
This should explore all relevant basic and isolate ideas in the subject of the document.
Step-2: Kernel Terms
All auxiliary or apparatus words in the title need to be excluded.
Step-3: Analysed Title
This part should explore the Kernel terms, symbols, fundamental categories, rounds and levels.
Step-4: Transformed Title
All the kernel terms should be rearranged as per the postulate of sequence
Step-5: Title in Standard Terms
Transformed title with the kernel terms replaced wherever necessary by their respective equivalents as given in the Colon Classification Schedule [6th Ed.]
Step-6: Title in Facet Numbers
The equivalent numbers identified in the Colon Classification Schedule [6th Ed.] should be assigned to the standard terms.
Step-7: Class Number
As per the rules the connecting symbols need to be applied for all the facets identified.
Step-8: Verify (optional)
This step may be added to translate the class number into natural language by way of verification.

Role of Teacher: *Class Teacher should confirm their understanding skills here. Students usually differ from each other in terms of the ability. Students with slow learning skills may consume more time to explain the concepts. Students with fast learning skills will move to the next level without difficulties. So, their learning skills need to be monitored here with more care. Based on the observations, the teacher may focus on the students, who are weak in learning. Such kind of students need to be given extra care and may be permitted to move to the Level-3.*

Level-3: Apply

Students should now carefully begin the level "*apply*" where the concepts that they have learnt in the classroom need to be applied properly to trace the class numbers for the given title. If their understanding in the subject concepts is good, there would be no issues in the level "*apply*".

So, before getting into the level "*apply*", they should make sure that they have understood the given topics clearly. The students should observe the title carefully and should plan accordingly in order to "*apply*" the techniques. Class teacher may raise a few questions here:

Title: Difference between analytical chemistry and extractive chemistry

What are the postulates need to be applied?

What are the principles need to be applied?
What kind of Phase-Relation needs to be applied?
Is there any necessity to apply the connecting digit?   etc.,

Note: Sometimes, students may use the memorizing techniques to explain the concepts in the Level-2. Students, who memorized those concepts will face the complications to trace the right techniques in the level apply. They can't give the right answers for the said questions unless they are strong in the Level-2. This insist that the students should stay away from the memorizing techniques and try to understand the concepts so that they can apply it whenever they are warranted.

Postulate of Basic Subject
Postulate of Fundamental Categories
Connecting Symbols
Postulate of Isolate Facet
Postulate of Rounds and Levels
Postulate of Sequence
Wall-Picture Principle
Phase Relation: Intra-Facet Relation-Difference
Notations and
Colon Classification [6th Ed.] Rules (whenever warranted)

Classification Steps 0-8:

Step-0	Raw Title
Step-1	Full Title
Step-2	Kernel Terms
Step-3	Analysed Title
Step-4	Transformed Title
Step-5	Title in Standard Terms
Step-6	Title in Facet Numbers
Step-7	Class Number
Step-8	Verify (optional)

Role of Teacher: *Class Teacher should confirm their skills here. Phase relation related concepts need to be taken care while structuring the class number. Hence, if the students are found with lack of skills in this level, they should be directed to go through the level again. They shouldn't be permitted to enter into Level-4 unless they are strong in the Levels-1, 2 and 3.*

Level-4: Analyse

Time for the students to enter in to the level "*analyse*": Here, they should break the title into different parts and "*analyse*". S.R.Ranganathan has developed 0-8 steps for the titles classification in his Colon Classification. Here, the students need to bring all the steps under this level. Since, the select title deals with the phase relation, it would be essential to *analyse* the *nature of relation, connecting symbol* and *representing digit*. If they have been applied properly, there would be no issues in the level "*analyse*". So, before getting into the level "*analyse*", they should make sure that they are strong in the level "*apply*". In this context, the level "*apply*" has been done properly.

Classification Steps 0-8:

Step-0: Raw Title
Difference between analytical chemistry and extractive chemistry.
Step-1: Full Title
In chemistry, difference between analytical chemistry and extractive chemistry.
Step-2: Kernel Terms
Chemistry. Difference. Analytical Chemistry. Extractive Chemistry.
Step-3: Analysed Title
Chemistry (BF). Difference (*Intra-Facet*). Analytical Chemistry [E].
Extractive Chemistry [E].
Step-4: Transformed Title
Chemistry (BF). Analytical Chemistry [E]. 0 (Connecting Symbol).
Difference (*Intra-Facet*). Extractive Chemistry [E].
Step-5: Title in Standard Terms
Chemistry (BF). Analytical Chemistry [E]. 0(Connecting Symbol).
Difference (*Intra-Facet*). Extraction [E].
Step-6: Title in Facet Numbers
E (BF). 3 [E]. 0 (Connecting Symbol). *n* (*Intra-Facet-Difference*). 5 [E].
Step-7: Class Number
E:30*n*5
Step-8: Verify (optional)
E (BF) Chemistry. 3 Analytical Chemistry. 0 Connecting Symbol.   *n*
Difference. 5 Extraction.

Role of Teacher: Class Teacher should confirm their analysing skills here. If the students are found with the lack of analysing skills then they should be directed to go through the level again. They shouldn't be permitted to enter into the Level-5 evaluate unless they are strong in the Levels-1,2,3 and 4.

Level-5: Evaluate

Students may start the level "*evaluation*". Here, they should evaluate their works related to the particular course, and the mistakes, if anything occurred need to be fixed. Evaluation helps them to make judgements and help to move to the final level. So, before getting into the level "*evaluate*", they should make sure that they have analysed the title thoroughly. The works are justified in this level. Students have taken a valid decision in terms of the Class numbers construction. Hence, Students can be permitted to move to the next level.

Role of Teacher: Class Teacher should confirm their evaluating skills here. If the students are found with lack of evaluating skills, they should be directed to go through the level again. They shouldn't be permitted to enter into the Level-6 create, unless they are strong in the Levels-1,2,3,4 and 5.

Level-6: Create

Students are reaching the final level "*creation*". Here, they should finalize their classification works related to the select title. So, before getting into the level *create*, they should make sure that they have evaluated all the works and traced no mistakes.

In this level, the given class number is finalized.

Class Number: E:30n5

Role of Teacher: *Class Teacher should confirm their creation skills here. If the students are found with lack of creation skills, they should be directed to go through the level again. They shouldn't be permitted to enter into the Level-6 create, unless they are strong in the Levels-1,2,3,4 and 5.*

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Teaching Strategy

Exercise-2: Saradhaiyin Thanthiram
Author: Kalki
Classification Scheme: Colon Classification [6th Ed.] by Dr.S.R.Ranganathan.

Level-1: Remember

As explained in the Execise-1 excluding the Phase Relations related concepts.
The Time Isolate and *Rules are very essentials to recollect for processing the select title. Further, the replacing symbol for favoured language (CC 6th.Ed. p.1.98), the four Trains of Characteristics and the related postulates of rounds and levels need to be recollected.*

Classification Steps 0-8:

As explained in the Exercise-1.

Role of Teacher:

As explained in the Exercise-1.

Level-2: Understand

As explained in the Execise-1 excluding the Phase Relations related concepts.
In addition to the concepts given in the Exercise-1, the Time Isolate related concepts and the rules need to be explained. Further, the four Trains of Characteristics and, the related postulates of rounds and levels need to be explained by the students.

Time Isolate: *[CC 6th Ed. p.2.7]*
Time Isolates help to trace the numbers representing the time with a great measure of hospitality.

Role of Teacher:
As explained in the Exercise-1.

Level-3: Apply

As explained in the Execise-1 excluding the Phase Relations related concepts and Questions.
In addition to the concepts given in the Exercise-1, the Time Isolate related concepts and the rules need to be applied. Further, the four Trains of Characteristics and, the related postulates of rounds and levels need to be applied.

Time Isolate: *[CC 6th Ed. p.2.7]*
Time Isolates help to trace the numbers representing the time with a great measure of hospitality.

Title: Saradhaiyin Thanthiram

Role of Teacher:

As explained in the Exercise-1 excluding the Phase Relations related concepts.

Level-4: Analyse

As explained in the Execise-1 excluding the Phase Relations related concepts.

Classification Steps 0-8:

Step-0: Raw Title

Saradhaiyin Thanthiram

Step-1: Full Title

In Literature, Saradhaiyin Thanthiram.

Step-2: Kernel Terms

Literature, Saradhaiyin Thanthiram

Step-3: Analysed Title

Literature (BF). Tamil [P]. Short Stories [P2]. Kalki [P3]. First [P4].

Step-4: Transformed Title

Literature (BF). Tamil [P]. Short Stories [P2]. Kalki [P3]. First [P4].

Step-5: Title in Standard Terms

Literature (BF). Tamil [P]. Short Stories [P2]. Date of Birth [P3]. 1 [P4].

Step-6: Title in Facet Numbers

O (BF). 31 [P]. 3 [P2]. M99 [P3]. 111 [P4].

Step-7: Class Number

O31,3M99,111

Step-8: Verify (optional)

O (BF) Literature. 31 Tamil. 3 Short Story. M99 Author Date of Birth. 111 Author Work Number.

Note: In Step-6, the numbers for [P4] can be collected from the given URL (Saravanan, T., 2020).

https://digitalcommons.unl.edu/libphilprac/3823/

Access the Link and find the

Table 3: Number of works greater than 64 and does not exceed 512

Works 1-64:
Work Number:1
Notation:111

Role of Teacher:

As explained in the Execise-1.

Level-5: Evaluate

As explained in the Execise-1 excluding the Phase Relations related concepts.

Role of Teacher:
As explained in the Execise-1.

Level-6: Create

As explained in the Execise-1 excluding the Phase Relations related concepts.

In this level, the given class number is finalized.

Class Number: O31,3M99,111

Role of Teacher:
As explained in the Execise-1.

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Exercise-3: Quantitative analysis of silver in an alloy
Classification Scheme: Colon Classification [6th Ed.] by Dr.S.R.Ranganathan.

Level-1: Remember

As explained in the Exercise-1 excluding the Phase Relation: Intra-Facet (Difference).
However, in Phase Relation, the Students need to recite the concepts associated with the Intra-Facet Relation-Bias.

Classification Steps 0-8:

As explained in the Exercise-1.

Role of Teacher:

As explained in the Exercise-1.

Level-2: Understand

As explained in the Exercise-1 excluding the Phase Relation: Intra-Facet (Difference).
However, the select title in the exercise-3 demands another kind of Phase Relation related concept. Hence, the Students need to explain the concepts associated with the Intra-Facet Relation-Bias in their own words.
They should come out with the definition for Bias relation along with the connecting symbol (0), and the representing digit (k) for Bias relation under the Intra-Facet [CC 6th Ed. p.1.55, p.2.28].

Role of Teacher:

As explained in the Exercise-1.

Level-3: Apply

As explained in the Exercise-1 excluding the Phase Relation: Intra-Facet (Difference).
However, in Phase Relation, the Students need to apply the concepts associated with the Intra-Facet Relation-Bias.

Title: Quantitative analysis of silver in an alloy

Role of Teacher:

As explained in the Exercise-1.

Level-4: Analyse

As explained in the Exercise-1 excluding the Phase Relation: Intra-Facet (Difference).
However, the Students need to analyse the title using the Phase Relation concepts associated with the Intra-Facet Relation-Bias.

Classification Steps 0-8:

Step-0: Raw Title
Quantitative analysis of silver in an alloy

Step-1: Full Title
In Chemistry, quantitative analysis of silver in an alloy

Step-2: Kernel Terms
Chemistry. Quantitative Analysis. Silver. Alloy.

Step-3: Analysed Title
Chemistry (BF). Quantitative Analysis [E]. Silver [P]. Alloy [P].

Step-4: Transformed Title
Chemistry (BF). Alloy [P]. Silver [P]. Quantitative Analysis [E].

Step-5: Title in Standard Terms
Chemistry (BF). Alloy [P]. 0(Connecting Symbol). Bias (*Intra-Facet*). Silver [P]. Quantitative Analysis [E].

Step-6: Title in Facet Numbers
E (BF). 193 [P]. 0 (Connecting Symbol). *k* (*Intra-Facet-Bias*). 115 [P]. 34 [E].

Step-7: Class Number
E1930*k*15:34

Step-8: Verify (optional)
E (BF) Chemistry. 193 Alloy. 0 (Connecting Symbol). *k* (*Intra-Facet-Bias*). 115 Silver. 34 Quantitative Analysis.

> ***Role of Teacher:***
> *As explained in the Execise-1.*

Level-5: Evaluate

> *As explained in the Execise-1 excluding the Phase Relation: Intra-Facet (Difference).*
> *However, the Students should not forget the Phase Relation concepts associated with the Intra-Facet Relation-Bias while evaluating the works.*

> ***Role of Teacher:***
> *As explained in the Execise-1.*

Level-6: Create

> *As explained in the Execise-1 excluding the Phase Relation: Intra-Facet (Difference).*
> *However, in Phase Relation, the Intra-Facet-Bias related concepts need to be included.*

In this level, the given class number is finalized.
Class Number: E1930*k*15:34

> ***Role of Teacher:***
> *As explained in the Execise-1.*

Teaching Strategy

(Title has been worked out by the students in the class room)

Exercise-4: Distribution of Prime Number
Classification Scheme: Colon Classification [6ᵗʰ Ed.] by Dr.S.R.Ranganathan.

Level-1: Remember

As explained in the Execise-1.
The related postulates of rounds and levels need to be recollected. However, the Phase Relation and the related concepts are not necessary to recollect for the given title.

Level-2: Understand

As explained in the Execise-1.
The related postulates of rounds and levels need to be explained. Students need not explain the Phase Relation and the related concepts here.

Level-3: Apply

As explained in the Execise-1.
Students were instructed to apply the learned concepts to execute the given title in the classroom. Since, the title doesn't fall under the phase relation, raising the questions related to the phase relations are not necessary. Hence teachers may ask the relevant and required questions only here.

Title: Distribution of Prime Number

Role of Teacher: *As explained in the Execise-1.*

The related postulates of rounds and levels need to be applied. Students need not apply the Phase Relation and the related concepts here.

Level-4: Analyse

The given title was analysed by the student by way of breaking down into various parts using the Classification steps. *(Many mistakes have been committed by the student. The verification step also missed by the student)*
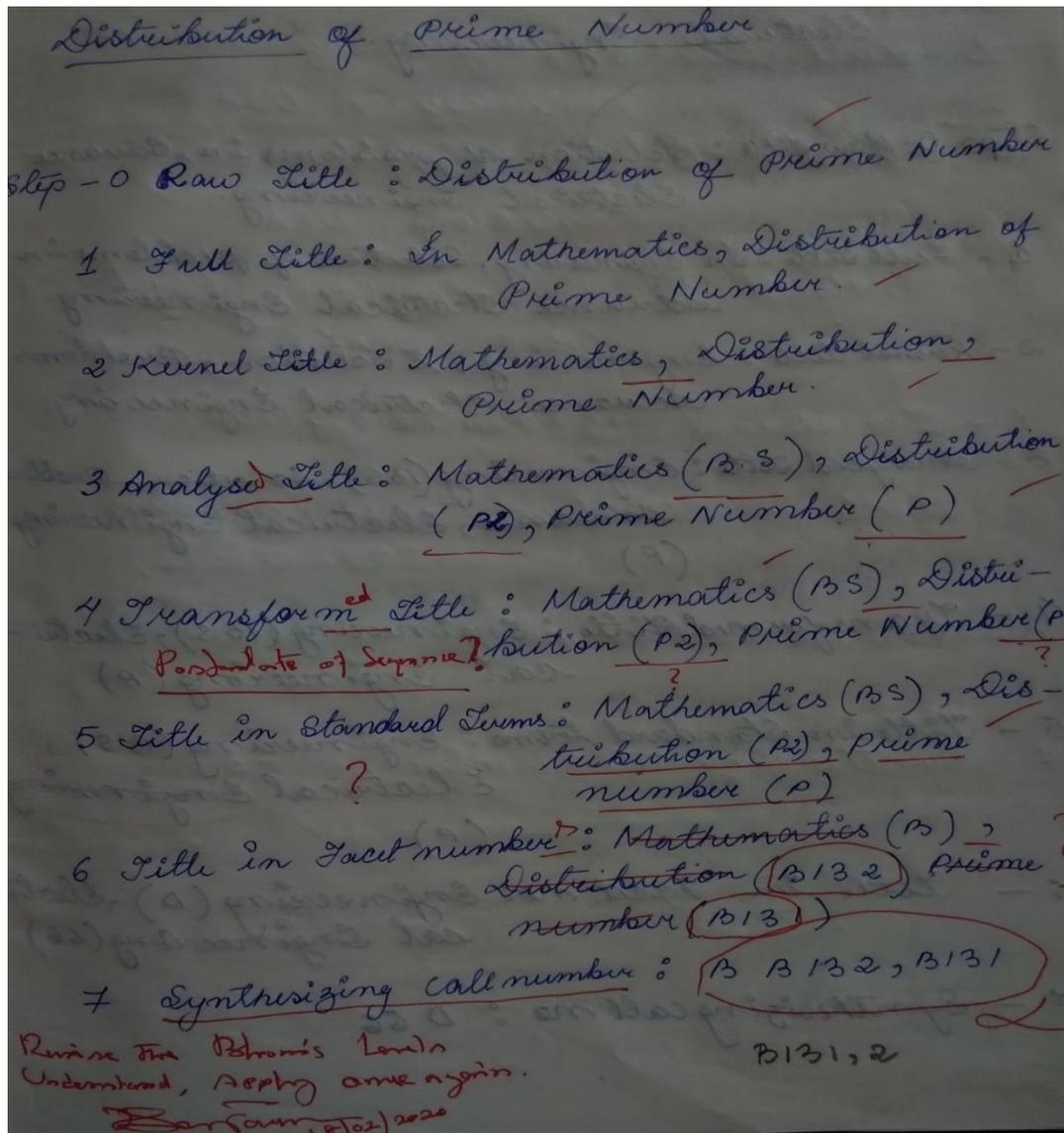
Classification Steps 0-8:

Fig-1: Worked out exercise-4

Role of Teacher:

As explained in the Exerciese-1.

Note: The above worked out exercise reflects many mistakes, which have been committed by one of the students. Hence, the particular student was directed to revise the concepts again.

Level-5: Evaluate

Here, the judgement is made by the student. If the student is strong in this level, the rules of Colon Classification should have been *evaluated* properly, in specific, from the *Step-2* to *Step-8,* the student might be sure that the classification techniques were rightly used. But the student didn't perform well in this level as expected by the teacher. If the student is strong in this level, the mistakes that exist from the *Step-2* to *Step-8* should have been traced and fixed. But the student slipped in the *evaluation* level. In this level, the student missed to *evaluate* the mistakes that were

committed in the Levels-3 & 4, which led to make a wrong decision while structuring the class numbers. In this level, the student has made the wrong judgements. In this context, it would be essential to recollect the of S.R.Ranganathan's *[Prolegomena.CA92 p.52]* words associated with the memorizing techniques related issues.

Role of Teacher:

As explained in the Exerciese-1.

Level-6: Create

The record has been submitted by the student after finalizing the class numbers. In the evaluation part the student has made the invalid decision to finalize the class numbers. The given output is an impact of the Levels-4 and 5 where the student didn't perform the classification well as per the rules. (Classroom exercise done by the student)
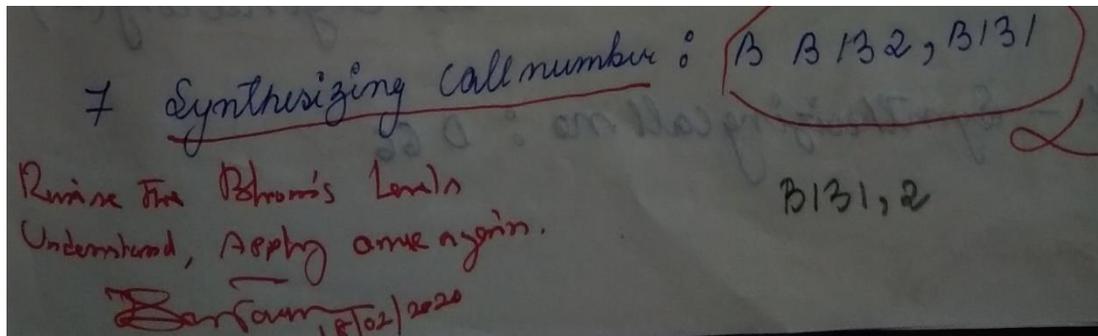

Fig-1.1: Worked out exercise-4 (Step-7)

According to Ishabatu (2018), the level selection can be decided based on the learner's learning capability. It won't be necessary to use all the levels unless there is a need. If the learners are strong in the first 2 levels the 3rd level *apply* can be opted. Hence, the concern teacher should monitor the learner's levels and based on their requirements, they may be directed to use the required levels only instead of repeating all unnecessarily. The given exercise was done by the student in the classroom using the Revised Bloom' Taxonomy. The time consumed by the student was 15-20 minutes (approx.). Since the students were freshmen, committing mistakes, and more time consumption were quite normal. This student falls under the fast learner category. In my class, it was the routine procedure that they should explain the Revised Blooms Taxonomy levels every day. Before entering into the practice, they should explain all the steps using the first two Bloom's Taxonomy levels (*Remember* and *Understand*) in their own words.

As a teacher, I had to evaluate their understanding level (Level-2) here so that they can move to the next level. I was glad about the performance of the student and thought that the student was good in *Level-1* and *Level-2*, but the exercise didn't stick with my assumptions. The given exercise-4 rings the bell, which may tell us one thing that the student's learning skills using the Revised Bloom's Taxonomy levels namely *remember* and *understand* were not good as expected when it comes to practice. Student has committed many mistakes in the classification process that clearly tells that the student should have to go again from *Level-1 to Level-6*.

The students may be strong in the theoretical concepts and perform well while explaining them whenever they are asked. However, in real time chances are there to face this kind of outcomes. Further, students learning capabilities also can be traced here. This student had been instructed by me to go through the levels again. It is clear that students, who are strong in the theoretical concepts may/may not slip down in practical sessions. This may be a *hypothetical* situation. In the next day class, the same student performed well and the task was completed within the stipulated time. A day or a week or a month may/may not help the learners to extract the essence from the subject as it depends on the individual capabilities. The continuous practice and experience may help the students to acquire necessary skills in classification.

> ***Role of Teacher:*** *Class Teacher should confirm their creation level here. If any of the students is found with lack of creation skills, they should be directed to go through the level again. They shouldn't be permitted to enter into the level-6 create, unless they are strong in the Levels-1,2,3,4 and 5.*

Findings and Conclusions:

To sum up, the above discussions may seem like a lengthy process and embarrassing. But it doesn't like what it seems to be. This may be realized by the teachers/learners when they process the titles using the Revised Bloom's Taxonomy levels. The learners, who are freshmen may consume more time when they carry out this process as compared to the skilled learners. After gaining enough experience, one can speed up the classification process and finish the task within the timeline. However, this assumption may differ for the freshmen/slow learners. Learning the Classification is not as easy as other subjects of Library and Information Science unless the learners are skilled in the Classification subject. Reciting the Classification concepts by way of memorizing would never help the learners to acquire sufficient skills in classification. The learners should focus on the Classification concepts, if they want to acquire enough skills. If their intention is just clearing the examinations or getting Library and Information Science degree only, then developing the skills in Classification would be questionable. This is applicable to all the subjects in Library and Information Science.

For Teachers:

The teachers shouldn't forget that before taking the students into the Colon Classification practical session, the related theoretical concepts should have been taught by them to the students so that they can fulfil the demands of Revised Bloom's Taxonomy levels successfully. There would be no restriction to use the same levels for the theoretical concepts. Further, they should take care of the levels while preparing the objectives for their classes. For instance, they may have planned to use the lower order skills such as remember and understand in the classroom. Here, teachers shouldn't cover the higher order skills related discussions, which fall above the level understanding. As discussed earlier, measuring the learners' learning skills may help the teachers to decide the levels, which need to be used/repeated/skipped.

For Learners:

The students shouldn't forget that before entering into the Colon Classification practical session, they should make sure that they are strong in the theoretical concepts associated with the Colon Classification so that they can fulfil the demands of Revised Bloom's Taxonomy levels successfully. If any one feels that he/she is not strong in any of the part, they may have further discussions with the respective teacher of the course. They can cross these levels easily once they have gained enough experience. Remember that regular practice is essential to raise the expertise in the classification and the Revised Bloom's Taxonomy levels.

Students come to our school to be *strong* in Library and Information Science subjects. It would be the responsibility of the teachers to make them *stronger* in Colon Classification. Rather than that I would like to prefer *strongest*. However, capability of the learners plays a major role here. According to S.R.Ranganathan *[Prolegomena.CA92 p.52]*, it is essential for the beginners to raise their familiarity with the basic concepts of Colon Classification so that they can find further progress. It will help them to reduce the memorizing techniques.

> *"I never teach my pupils. I only attempt to provide the conditions in which they can learn"*
> *- Albert Einstein.*

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Model Learning Objectives Based on Revised Bloom's Taxonomy

Lesson: Postulate of Basic Facet

Levels	Levels Name	Objectives	Model Questions
1	Remember	The students will be able to outline the Postulates at the end of this lesson.	How would you list the Postulates?
2	Understand	The students will be able to explain the Schedules of Basic Subjects at the end of this lesson.	Can you describe the Postulate of Basic Facet?
3	Apply	The students will be able to use the concepts to trace the Basic Facet at the end of this lesson.	What facts would you use to trace the Basic Facet for the given title?
4	Analyse	The students will be able to analyse the Basic Facet at the end of this lesson.	What is the relationship between the Basic Facet and the Basic Class Number?
5	Evaluate	The students will be able to defend the works at the end of this lesson.	How could you select the Basic Facet for the given title?
6	Create	The students will be able to build the Basic Facet at the end of this lesson.	What way would you create the Basic Fact for the given title?

[Note: Annexure is given for illustrative purposes only. The framed learning objectives and the questions may be changed based on the topics selection and the six levels. The questions should include the levels based relevant action verbs. For instance, the first question under the level-1 "Remember" reflects the action verb "list" and this action verb should not be used in other levels. The action verbs associated with the low-level objectives need to be excluded in the higher-level objectives. If you do, the level name would be changed. The related objectives also need to be restructured.]

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