



Estd. 1953

MOUNT CARMEL COLLEGE OF TEACHER EDUCATION FOR WOMEN

Muttambalam P.O., Kanjikuzhy, Kottayam- 686004
(Recognised by NCTE, Affiliated to Mahatma Gandhi University)

CRITERION II

TEACHING-LEARNING AND EVALUATION

2.4: Competency and Skill Development

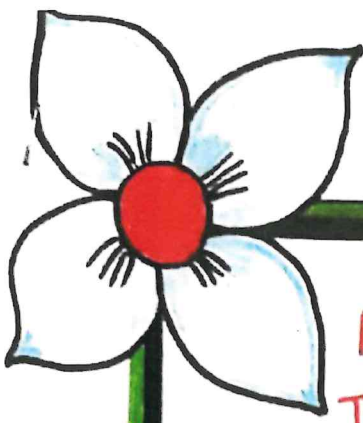
2.4.7: A variety of assignments given and assessed for theory courses through

- 1. Library work**
- 2. Field exploration**
- 3. Hands-on activity**
- 4. Preparation of term paper**
- 5. Identifying and using the different sources for study**

Any other relevant information

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MOUNT CARMEL COLLEGE OF
TEACHER EDUCATION FOR
WOMEN - KOTTAYAM

EDU 104 : 18 - UNDERSTANDING THE DISCIPLINE OF
NATURAL SCIENCE EDUCATION

Correlation with other
Disciplines - Languages, General
Science, Mathematics,
ICT and Performing Arts -
Theatre and Drama

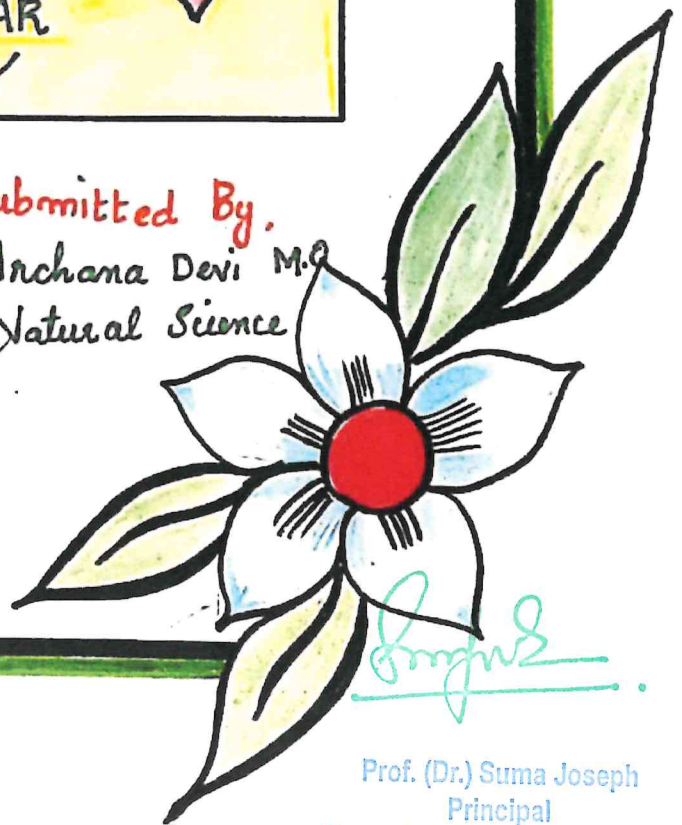


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06/10/2022

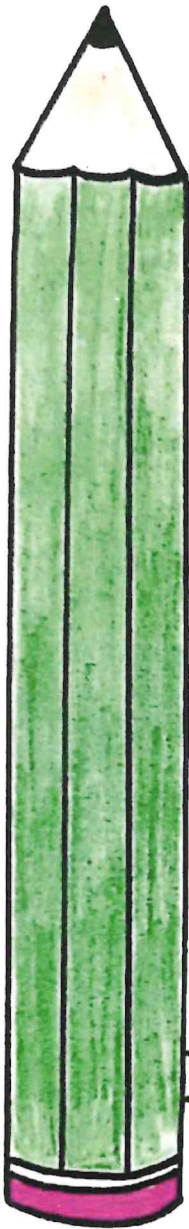
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INTRODUCTION

The major aim of education is to bring all-round development of the student, for this the unification of knowledge is very necessary. To achieve, such a unification a conscious effort has to be made by teachers teaching various subjects. It is only by such joint venture that we will be able to achieve the goal of unification of knowledge and bridge the gap that separate them.

Science cannot be taught in isolation. All the branches of science are independent. A number of facts and principle are common to various science subjects. New subjects like physical chemistry, biochemistry and soil chemistry, geo-physics etc. have been introduced.

This, however doesnot mean that teacher of one branch of science ought to know everything of other branches of science, but it is very essential that he should have sufficient knowledge of other sciences so as to bring about integration of subjects. He should also know where to depart from his own subject and how much venture into areas which are not his own.



MEANING OF CORRELATION


To study one subject with other or interpersonal relation of different subject is called Correlation in the field of Education. According to Munn "correlation is a statistical measure on the degree of association between two variables"

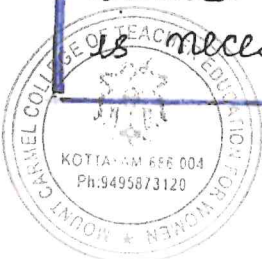
FORMS OF CORRELATION

Correlation is found to be mainly in three forms:

- (a) Vertical Correlation
- (b) Co-lateral correlation
- (c) Horizontal correlation

(a) VERTICAL CORRELATION

To find the relationship among different branches of science is called Vertical correlation. Such correlation is also called Unilateral correlation. It also includes correlation of different topics in the same branch of a given subject (correlation of old knowledge with new knowledge). Branches of science or the subject is many a times taught by different teachers, such that each branch is treated as a different entity. Vertical correlation is necessary for continuity of knowledge and 



understanding of the subject.

(b) CO-LATERAL CORRELATION

Co-lateral correlation helps us to see relationship among different units of one subject/content.

(c) HORIZONTAL CORRELATION

The relation of one subject with other subject is called Horizontal Correlation. Such correlation is also called multilateral correlation. All subjects of the school curriculum contribute towards the realization of the aims of education. Since they have the same purpose, study of one subject helps in the study of other subjects.

CORRELATION WITH OTHER DISCIPLINES

1. Correlation with language
2. Correlation with General Science
3. Correlation with Mathematics
4. Correlation with ICT
5. Correlation with Arts Theatre and Drama.



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1. CORRELATION WITH LANGUAGE

Biology students are usually weak in their expression. In order to make the science students able to express their thoughts in clear, concise and correct, attractive language, the Biology teacher and the language teacher must take up a joint responsibility for the cultivation of a good style in answering essay type questions and in written accounts. The language teacher can ask the students to write an essay on some invention or on the life-history of a scientist. He can give some piece for translation from some scientific work. He can be occasionally invited to criticize the expression of science students, give some constructive valuable suggestions for improving the style and expression.

2. CORRELATION WITH GENERAL SCIENCE

(a) Biology and Physical Science

The science teacher should correlate the subject with daily life as well as environment. A citizen of modern world sees countless contribution of science all around him because we are living in an age of scientific culture. In the words of **A.N. Whitehead**, "The great conquerors from Alexander to Caesar and from Caesar to Napoleon, influenced profoundly the life of the subsequent generations. But the total effect this shrinks to insignificance."

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nce compared to the entire transformation of human habits and human mentality produced by the line of men of thought from Hales to the present day".

Science is universal, it has no barrier of any kind. The recent advances in the field of science and technology and its wide application in industry, medicine, agriculture, transport, communication as well their use in daily life justify the value of science. The student should be able to relate the classroom learning to the environment around him whether it is health or agriculture. While teaching the teacher should give examples of rural background in rural areas and an urban background in urban areas. Visits or excursions can be arranged while dealing with the topics concerning with these.

The senior secondary, physics text book of the NCERT says, In physics we deal with many physical phenomena and experiences. They do not only excite, but also educate, the fall of an apple leads us to gravitation. A spherical liquid drop helps us to understand surface tension. Beating of a drum causes vibrations producing sounds.

(b) Biology and agriculture

Biology and agriculture are directly inter-related with each other. Through biology student can get information about structure and composition.



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of soil, fertilizers, manure, plant and climate along with all the diseases of plants which help the peasant to grow better crop and get better yield.

Green revolution occurred through the use of chemicals on a large scale. Use of artificial fertilizers, pesticides, advance methods of sowing and harvesting crops have increased the yield of the crop every year.

(C) Biology and Geography

Geography is so much related to Biology that it has now been regarded as a branch of science. The study of the soil, climate, distribution of plants and animals etc. brings the two subjects close to. The topics like pressure, temperature, humidity, description and properties of metallic and common minerals, the effect of climate and other factors on the plants and animals etc. are common to both science and geography. Hence, the Biology teacher and the geography teacher should put in cooperative efforts to bring about a close integration of both the subjects.

(D) Biology and history

In fact there is no direct relation between History and Biology as History is related with past time and biology is related but indirectly both are interrelated as the sequential form of History is based on science and cultural History



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shows the effect of scientific assumption on the Humans. All the inventions and discoveries are found in History and History tells about the odd circumstances in which scientist discovered the thing which helps students to learn and live in all situations for the welfare of society.

The correlation between biology and history is best sought in topics like story of earth, story of man, story of moon etc. The history of scientific inventions and discoveries provides useful background for teaching of history.

(e) Biology and Civics.

Biology and civics both tends to make students a skill, efficient, dutiful and perfect citizen. Students get knowledge about scientific discoveries through science which helps the students to lead their life peacefully. Besides it science develops feeling of social responsibilities among them.

To be a good and dutiful citizen it is essential to know how to keep ourselves healthy, how should we control pollution and garbage. These information are mainly provided by the civics. The topics like food, weather, habitat and clothing are common in biology and civics. Students study all those situations which helps them to live their life comfortably.

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3. CORRELATION WITH MATHEMATICS

Biology is incomplete without Mathematics. Mathematics have given a sound footing to the scientific law. The knowledge of mathematics is important for the real understanding of science. Many mathematical topics are constantly used in science eg: decimals, proportion, inverse ratio, equations, graphs etc. The teacher of Biology and of Mathematics work in cooperation to bring about correlation and coordination of the two subjects and to remove any omission or duplication in either of the subjects.

4. CORRELATION WITH ICT

There are several ways in which information and communication technologies can transform the educational landscape. These include allowing access to high quality learning material available from remote sites; facilitating novel learning materials; permitting open connectivity between learners and between learners and teachers independent of location; and managing learning and monitoring progress.

In principle teachers can already download a wealth of science instructional material from websites, including that which is interactive. Computers, networked or otherwise, can run



Software that simulates many standard science experiments and offers interactive experiences that are otherwise difficult or impossible to provide.

Record keeping on student progress and the analysis of assessment data to establish learning difficulties can be more efficient using computer based systems. Adequate hardware, software and connectivity are all essential if ICT infrastructure is to be sufficient to allow the opportunities identified to be turned into actualities. The three are independent. The three are inter-dependent. If all elements are not present, many developments cannot take place.

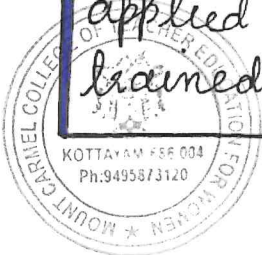
Science education is a sub-system that has its own characteristics that can be a separate focus of attention. Some secondary school systems are very selective; others are not. Some have separate schools identified and resourced to provide high quality science and technology education, others do not.

Science curricula are organised in many different ways with differing levels of subject integration, time allocations, expectations of practical work, and emphasis on the academic or the applied. The extent to which science teachers are trained as specialists within a conventional

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discipline, or prepared to teach across a range of subjects also varies. All these things constitute starting points for policy and planning.

Why use databases in science education ?

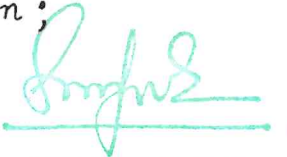
1. For recording data collected during an investigation or an experiment.
2. In allowing students to sift or browse through their own, or someone else's data using the computer.
3. Students can explore data in a more systematic manner. They can :
 - * look for patterns
 - * put forward hunches
 - * make predictions
 - * Suggest and test hypotheses
 - * draw and discuss interpretations.
4. Better display.

The use of databases in science supports and enhances many of the so-called process skills in the science curriculum such as classifying, hypothesising and testing.

The value and potential of the internet in science teaching.

The internet provides a way of :

- Sharing and exchanging information;
- Communicating ;
- accessing information ;



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- providing a local exchange of information on resources eg; for pooling;
- linking with industry
- giving current information to pupils/students;
- improving study skills and search skills;
- giving pupils the excitement of online computer information;
- allowing collaboration in science: between pupil and pupil, school and school, teacher and teacher
- downloading material, eg; data
- Setting up a forum for debate and queries among teachers of science.

5. CORRELATION WITH PERFORMING ARTS

The blend of Drama, Art and Education has been there since the time Plato started his Academy. He believed that informing a student just about the concept is not enough, a good teacher has to induce the ability of critical thinking and the importance of value education in a student. Drama and Theatre both are pivotal outlets for self-expression and using drama as a teaching tool, students are involved in every way, be it intellectually, physically, socially or emotionally. The use of drama and arts in education leads to holistic learning, accelerates personality development in childrens.



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DRAMA

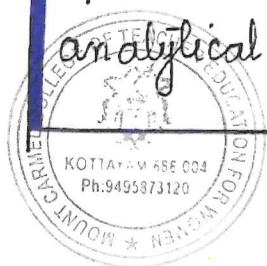
Drama is simply referred to as a form of performance which is represented in a performance in a theatre, radio or TV and in any of its performing arts such as plays, movies, ballet, musical etc. The word 'drama' is actually derived from the Greek word 'drama'/'dran' which also refers to 'I do' or action.

Benefits

- Facilitate a better learning environment.
- Boosts imagination.
- Increases participation.
- Imparts soft skills.
- Engages learners in problem solving.
- Develops discourse.
- Co-working and co-learning.
- Potential catalyst to bring impactful changes in society.
- Motivates learners to become critical thinkers.
- Meaningful learning through symbols.

ART

Arts in education can make learning fun and engaging while also inculcating many important skills in learners like critical thinking, creative analytical thinking, life skills, team work and more.



Signature

Benefits

- The use of arts in education makes children more creative and imaginative through various co-curricular activities.
- Arts also imbibe students with useful motor skills especially in younger children as they learn to hold a coloring brush or draw different shapes.
- As students are able to learn better with engaging artistic methods, the role of art in education is also to improve academic performance.
- Different forms of arts help learners discover their talents and foster their creativity thus making them more confident about their unique abilities.

THEATRE

Storytelling is a powerful tool to facilitate learning in a meaningful manner. Since theatre itself is a potential driver of bringing impactful change in society, it plays a crucial role in utilising drama and art in education. Using theatrical musicals as well as dramas, learning can be carried out in an interesting manner. It caters to different learning methods as it adheres to VARK, which is a famed teaching model by Neil Fleming and emphasises on the use of

Visual Aural Read/Write Kinesthetic Sensory in education.

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CONCLUSION

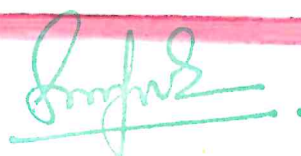
To take the learning process to its desired end we have to take full advantage of various correlation and applications of bio science just for our convenience we have divided science into different branches of study. When we study every subject alone, we think that the discipline is complete in itself in a such a situation the thinking of students become unilateral. In this context correlation is very important. It is also true that comprehension oriented knowledge is more stable than memory oriented knowledge and since correlation is based on concrete experience, facts and circumstances, so the knowledge based on correlation give student a new vision.

REFLECTION

The teacher should bring about correlation wherever desired in order to make the teaching-learning process interesting and natural. He should have sufficient knowledge of subject other than his own. Almost all the topics in all the branches of sciences are somehow related to one another and the teacher should try to

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bring about integration between them.

For example, A teacher, while teaching the sense organs, says an eye should make a parallelism with a camera, which students have learnt in physics. To understand the images, a knowledge of image by the convex lens is essential. Thus, if the teacher possesses a knowledge of physics, he can most successfully correlate the topic with other branches of science and make whole knowledge easily acceptable to the children.

“There seems to be little correlation between a man's effectiveness and his intelligence, his imagination or his knowledge.”

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REFERENCES

1. Dr. Shaileendra K.V , Correlation of Biology with other Subject . (pp;1-5)
2. <https://leverageedu.com> > Blog : Role of drama and Art in Education : Importance .
3. Jerry .W & Giren .I (2008) : Science learning , Science teaching



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