

Section 1

What is CCE and what it isn't?

If you are a teacher, you may be often bothered whether students are actually learning as a result of your efforts. It is possible to get some idea, looking at students' faces or participation, but when you give a test later, it may turn out that their learning is inadequate or faulty or only some students could progress the way you wanted. If you do not see desired results of your work, you may feel dejected and frustrated. It is often too late to correct the situation if the class has moved on to later topics. At times, the later topics are also not learnt fully well, since the previous learning has not been strong enough. You also may find your learners not taking enough responsibility of their learning, and you have to somehow push them to put in effort.

What can you do to save yourself from this constant stress? It is being realised the world over that using assessments *formatively* is one way to save the teacher from this frustration and help her/him in actually making learning better. But the evolving newer approach, which came to be known as CCE (**Continuous and Comprehensive Evaluation**) in India, is often misunderstood. CCE, as currently implemented, is not helping learning as it should. CCE when correctly understood, is quite different from traditional assessments, and in this document, we will try to show how it can be done differently to help both the teacher and learner. The correct CCE approach actually helps to change the classroom situation *dynamically*, meaning, to improve as it proceeds. It helps *lessen* the teacher's stress and burden. It's a process that goes *along with* teaching-learning and that's why the word '**continuous**' is an important part of it. We will first discuss this part and then come to the '**comprehensive**' part. It must be clearly stated that continuous assessment is **not** just more frequent testing of students. Testing done in traditional ways is often extremely stressful and burdensome for both the teacher and students. CCE can help learning only if the stress, anxiety and burden in classrooms are drastically reduced for both the teacher and the learner and teaching-learning is made non-threatening, as well as free from fear.

To understand continuous assessment, think of a doctor who is giving a prolonged treatment to a patient. The doctor diagnoses the condition of the patient, gives treatment, but keeps judging from time to time whether the treatment is working. She/he keeps changing treatment strategy if the current one is not giving desired results. The teacher does not have patients with ailments whose condition need correction, but learners with different learning needs and styles. She has to roughly use the same diagnostic strategy to adjust her inputs. She judges the effectiveness of her teaching and gaps in learning from time-to-time. Accordingly she keeps evolving her teaching strategy. This is a very creative and thoughtful process, since there are a large number of learners, who keep responding differently to everything done by the teacher and are at different stages of learning. So the teacher must constantly make alert judgement, using her

previous knowledge of her learners. CCE assumes a teacher who is a reflective practitioner, someone who constantly reflects on her interaction with students.

Does continuous assessment sound too difficult? Actually good teachers have always used it effectively. Here, we are stressing on some important aspects of it, to show how it can help strengthen learning.

Understanding Important Terms Related to CCE:

Let us first discuss some important terms and misconceptions related with assessment and CCE:

- ❖ Assessment during teaching-learning gives clues about pupils which the teacher *can act upon immediately* to enhance learning, especially when students are facing difficulties and additional help is needed. Continuous assessment does not always require the use of structured tests which are given to all pupils at the same time. Often they may not even know they are being assessed. Thus continuous *does not mean more frequent formal tests*.
- ❖ One major misconception is related to the words **formative** and **summative**. In report cards in a large number of schools, currently teachers report formative assessment in every quarter that include project work and other activities. Actually formative assessments are *not* meant to be reported in report cards. The word formative comes from ‘formation’, i.e., formation of the learning process. These are assessments designed to monitor and improve students’ progress during the teaching-learning process (also called assessment *for* learning). Any information on learning of a child, for example, written work, oral responses or simple observation of the child, can be used *formatively* by the teacher to help the learner. Summative assessments are done to determine the totality of a student’s learning after a pre-decided portion of syllabus or time period is completed (also called assessment of learning or evaluation). The word summative comes from ‘sum’, or making an estimate of *total* learning.
- ❖ Often the terms ‘**assessment**’ and ‘**evaluation**’ are used interchangeably. There is a difference in what these terms imply. **Assessment** mainly aims at judging the quality of performance of children *while learning is going on*. **Evaluation** focuses on the actual level of performance attained after a certain period of instruction. Evaluation is not concerned with why or how that level was attained. It judges the quality of students’ work on the basis of established criteria and assigns a value to represent that quality (for example, marks or grades). *Assessment is more process-oriented or formative; while evaluation is product-oriented or summative*.
- ❖ The term ‘**comprehensive**’ is often misunderstood. It refers to a holistic view of the child. This means taking the child’s personality as a whole, for example, her attitudes towards learning, social interactions, emotional health, motivation, physical health, strengths and weaknesses etc.
- ❖ A confusion exists related to what will be treated as curricular and co-curricular areas. Arts Education, Health and Physical Education, Work Education are often treated as co-curricular areas

whereas Language, Mathematics, EVS, Science, Social Sciences are considered as curricular/scholastic areas. NCF-05 treats all of the above as curricular areas, since curriculum (the totality of planned learning) is seen much more broadly than only scholastic achievement.

- ❖ Educators think that the prime purpose of evaluation is labeling or comparing performance of children against each other. Evaluation often points out weaknesses of the child or what the child *does not* know, rather than focusing on improving the child's learning. The spirit of CCE is to enhance student learning both through assessments and evaluations. It compares the performance of a child with her/his previous performance, instead of comparing her/him with others.
- ❖ Yet another misconception is related with the terms **marks and grades**. Educators often think of marks as quantitative or reflecting the product of learning, and grades as qualitative, reflecting the process of learning. Since teachers are habituated of marks, they often give marks first and then convert them into grades. This shows faulty use of both marks and grades. Marks and grades both are evaluative judgment of the child's performance. They assign a number or value to learning. *They should not be used during the process of learning for formative purposes.*
- ❖ There is a general misunderstanding of the role of recording in CCE. Educators think that in CCE they need to record each child's progress daily, weekly or continuously on a large number of criteria. This is totally contrary to the spirit of continuous assessment. Teachers *need not assess all the children all the time, nor do they need to make elaborate records of pupils' progress and report them to others*. Continuous assessment is only to help the teacher teach better and she may record only that which would be genuinely useful for her to enhance teaching-learning. Often in class, instead of individual students, the teacher may assess only the processes, to see how well her teaching strategy is working.
- ❖ It is also mistakenly thought that in CCE, every child needs to be promoted whether he/she learns or not. The real spirit of CCE is that every child would *get an opportunity to learn all through the process and she/he would get help whenever facing difficulties*. This means if the teacher assesses the student all along and devises strategies to help so that the student keeps learning, then the situation of a child 'failing' at the end of a term will not arise at all.
- ❖ Another mistaken view is that in CCE, the teacher needs to take complete responsibility and burden of both continuous and comprehensive assessment. This makes the task seem impossible and makes the teacher feel extremely burdened with unrealistic expectations. On the contrary, CCE actually aims at *reducing* the teacher's burden. It places the responsibility of learning equally on learners. This means that children have to be given responsibility of assessing their own work, their peers' work and helping each other learn. Learners who go at a faster pace can be a good

resource to help the teacher. Thus collaborative learning and group work become an important means to lessen the teachers' burden.

The 'comprehensive' part of CCE

Many aspects of a person contribute towards making him or her a good learner. The 'comprehensive' part in CCE recommends that the student's learning is seen holistically by the teacher along with her personal and social qualities. The on-going assessment (especially through observation) of regular pupil activity in class should also cover development in these areas. This is what makes it *comprehensive*.

However, it is important to recognise that many of these qualities cannot be judged over short-term and some cannot be recorded based on 'hard' evidence. Qualities like enthusiasm, cooperation, patience, concentration, interest and motivation, helpfulness and sensitivity to others and to the environment, can only be observed over several months and not 'shown to others' with evidence. These can only be observed by the teacher to understand the student's overall personality and how it contributes to the student's growth. Formal tests for aspects of personality are very difficult to make. More informal ways of noting progress in these aspects must be used. Peer assessment and self-assessment done in a friendly and non-threatening manner are very useful here.

Section II

CCE in Mathematics Classrooms

Mathematics plays an important role in our life. It not only helps in day-to-day situations but also develops logical reasoning, abstract thinking and imagination. It enriches life and provides new dimensions to thinking. The struggle to learn abstract principles develops the power to formulate and understand arguments and the capacity to see interrelations within concepts. This enriched understanding helps us deal with abstract ideas in other subjects as well. It also helps us understand and make better patterns, maps, appreciate size, dimensions and observe similarities in solids and shapes.

As per NCF-2005, the main goal of mathematics at Upper Primary Stage is that it should be able to address many problems from everyday life and offer tools to solve them. The transition from arithmetic to algebra is an example of this. At this stage a consolidation of basic concepts and skills learnt at primary stage is necessary. However, engaging child's interest and offering a sense of success to her in solving such problems is essential.

Mathematics at the upper primary stage is a major challenge and has to perform the dual role of being both close to the experience and environment of the child and being abstract. Children often are not able to work in terms of ideas alone. They need the comfort of context and/or models linked to their experience to find meaning. This stage presents before us the challenge of engaging the children while using the contexts but gradually moving them away from such dependence. So while children should be able to identify the principles to be used in a contextual situation, they should not be dependent or be limited to contexts. As we progress further in the middle school there would be greater requirement from the child to be able to do this.

Learning Mathematics is not only about using algorithms, getting correct answers or methods, not only about how to solve problems, but to look for patterns and logical relations between them. Mathematics classrooms at the Upper Primary stage must focus on the following:

- Help the learner realize that mathematics as a discipline relates to our experiences and is used in daily life, but has an abstract basis.
- Know that emphasis should not be on teaching how to use known appropriate algorithms, but on helping the child develop an understanding of mathematics and appreciate the need for and develop different strategies for solving and posing problems.

- Know that language should be given due importance since it helps in developing mathematical understanding.
- Provide ample opportunity for the child to help her/him evolve her/his own understanding through engagement with the concepts.
- Understand that classroom processes should de-emphasize algorithms and remembering of facts, and should emphasize the ability to follow logical steps, develop and understand arguments.
- Realize that the underline philosophy of Mathematics classroom should be to make the child confident and competent in mathematical thinking.

The students must be assessed with regard to the following capabilities:

Are they able to -

- Apply mathematical facts, generalization and provide reason for it?
- Argue logically the truth and falsity of statements?
- Understand the basic structure of different branches of mathematics such as arithmetic, algebra, geometry, data handling, mensuration etc?
- Understand and apply different ways of dealing with and handling abstractions?
- Apply mathematical concepts learnt to solve problems in newer contexts?

Quite a lot of concepts in mathematics are abstract. How to make them meaningful to children is a continuous challenge for teachers. In an elementary stage, where children are not yet fully able to make the kind of abstractions required for understanding, it makes sense to teach mathematical concepts in different ways. Emphasis needs to be placed on representing mathematical ideas with concrete materials. There is also a need to move on or shift to multi-dimensional approach, which includes spoken language, concrete materials, pictures, real life contexts and symbols in written form also. All such strategies will help in development of mathematical thinking also.

In order to understand the assessment strategies that happen alongside learning, a few examples have been provided. This exemplar material will give the teacher an insight into a classroom situation where an attempt has been made to depict that assessment is an integral part of the teaching learning process.

Examples of Continuous assessment

We are presenting some examples of teaching-learning situations to help you see how continuous assessment can be done during teaching. We request the reader to keep in mind that the purpose of the examples is not to show how good teaching can be done. Good teaching can be done in a large variety of ways and there is no single best method. The use of these examples in any way must also be as per the children's cognitive levels and syllabi. These are only to show how *assessment can go on continuously*

along with teaching. Here we have shown the teacher's thinking, judgements and decisions in brackets/italics.

It is important to note that a teacher will mostly try to assess what she expects the children to learn from the lesson. So prior thinking by the teacher on *what is expected to be learnt* from a lesson /unit is extremely important and we have tried to show it in each example.

Example-I

Theme: Area & Perimeter

Classes: VI

Before initiating the activity/task the teacher created a learning situation by asking some questions relating to their previous learning experiences such as:

- What is area?
- How would you calculate the area of rectangle?
- What is perimeter of a shape?
- What would be the perimeter of a rectangle?

After convincing that they have good idea about calculating area and perimeter of various shapes, she decided to take up this activity in a group situation.

Material Required: Squared paper, Scissors, Gum.

Time Required: At least 2 periods together

Objectives:

- (i) To assess the understanding about the area and perimeter of geometrical shapes, especially rectangle.
- (ii) To make the students realize that rectangles with same area may have different perimeters.

Task:

The teacher will divide the class into groups of 4 children each. The task will be detailed out by the teacher like “each group will make as many rectangles as possible of 24 square units with the help of this squared paper. After cutting out such rectangles from the squared paper find out their perimeters and try to see which rectangle has got the biggest perimeter?”

Once the teacher has explained the task to all the students and has attended to different queries like “how do we check the area of the rectangle?” The teacher allows other students to respond to some queries and

further probes to clarify their doubts. Once all the queries are settled, the group work starts. As the students are working on the assigned task, the teacher goes around and observes the groups and notes down about their functioning on the following aspects:

- (i) Discussion within the group regarding the task.
- (ii) Decision making about how to do the task
- (iii) Strategy/strategies for finding out various possibilities of various rectangles with 24 square unit area.
- (iv) On the aspect of peer learning (learning from each other)
- (v) On functioning of the group-coming to a decision, working together & helping each other.

All these observations will form part of continuous assessment.

Wherever any group is unable to progress, the teacher only provides them some clues/hints so as to make them think further about the strategies for the task. As the group work progresses further, queries are raised regarding the work done i.e. recording the perimeter and area of the rectangles. Student: “We have cut out the rectangles. How do we record the perimeter?” The teacher allows other groups to show how they have done it.

Another student: “We have recorded the area and perimeter on the rectangle itself?”. Thus, the teacher facilitates the problem solving based on peer experiences.

The students are finally able to complete the task and most of the groups report to the teacher that they have completed the task. The teacher then invites each group to present what they have done. For the presentation, she/he is encouraging each member of the group to take part in the presentation.

The teacher asks questions which help her/him to assess the understanding of students and work done by them. She also encourages questions by other students.

Post group work

Questions:	Assessing responses (assessment for learning)
What is the area of each rectangle you have cut out?	To check whether students have understood the given task
How did you keep the area same in the rectangles?	The response will clearly show what strategy the group used in making different rectangles with the same area.
How many rectangles of the same area could your group cut out? (i.e. 24 sq. units).	To ascertain that the students have got their information correctly & have explored all the possibilities.
Can you think of various rectangles with area of 24	If the students are unable to think of an answer to this question, the teacher can give a hint by asking learners to

square units without making them? How do you work it out?	think how factors of 24 can help here.
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To other groups for peer assessment: The teacher here allows other groups to respond (may be a short discussion takes place on how many rectangles are possible with an area of 24 sq. units)

What is the best way to find out the number of rectangles possible? and why? <ul style="list-style-type: none"> • Is the perimeter of all the rectangles same? • Which rectangle having the area as 24 sq units has the biggest perimeter? • Why is it so? 	The teacher may analyse the response critically and let the other groups to participate.
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The assessment will help the teacher to get an insight into children’s understanding about the concepts of area, perimeter and applied their understanding in a new situation (the given task) and the co-relation between areas and perimeter.

Teacher’s Reflections <ul style="list-style-type: none"> • During the revisit/task how many students showed understanding of concept of “Area” and “Perimeter” How to bring all those students to an expected level of understanding who still have to achieve it. • How to design a task to involve every child in doing it?
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Example-II

Theme: Linear Equations

Class: VII

Previous Knowledge: Algebraic Expressions, Sign of Equality, Equations, Conversion of a Word problem into a linear equation & vice-versa.

Objective: To assess whether students can convert a word problem into a linear equation

Creating learning situation for understanding

Rama is a mathematics teacher. She is teaching algebra to class 7. She wrote the following problem on the black board.

Raghav's grandpa is 60 years old, which is equal to adding 4 years to eight times Raghav's age. What is Raghav's age?

She wanted to assess the previous knowledge of students and the level of learning of the concept learnt. She also wanted to identify individual and special needs if any. She wanted to do this through discussion.

She asked the students questions like “what is an algebraic expression?” “How is it different from an equation?” “How will you express, 7 subtracted from x equals 10, mathematically?” She encouraged the students to find answers to such questions.

When the students were engaged in doing this she observed “who is seriously trying to find answer?” “Was he referring to any material?” “Was she discussing and trying to get answer from her friend?” etc.

Task

She carried out the following discussion in the classroom. The analysis on the right summarizes the point of view of the teacher and students.

Discussion	Assessment Points
She asked students to analyse the given problem. Most of the students replied 1) grandpa's age is 60 years, 2) they have to find Raghav's age.	<ul style="list-style-type: none"> Teacher assessed that almost all the students could cull out the main information from the problem.

Teacher: How to find the age of Raghav? Amina: First we have to convert the problem into a linear Equation	
Teacher: What is a linear equation? Amina:.....	<ul style="list-style-type: none"> Assessing previous knowledge.
Rajesh: $60+4=64$ is an equation Teacher: Why do you think so? Rajesh: Because it has a sign of equality, numbers and an arithmetic operation. Bhawna: But it has no variable. And also Raghav's age can't	<ul style="list-style-type: none"> Teacher realized that Rajesh is not yet clear and couldn't make a linear equation. Correcting her class mate.

be 64 years as his grandpa is older than Raghav.

Teacher what do you mean by a variable?

Bhawna: an alphabet which is used in place of an unknown value. Here Raghav's age is not known so it can be taken as x.

Most of the students agreed with Bhawna

Teacher to Rajesh: Can you correct your equation?

Rajesh:.....

Sudhir: It is $x+4=60$

Teacher: Read carefully, is there any other information given in the word problem?

Bhawna: Yes it is there. It says eight times of Raghav's age.

Sudhir: So the equation is $x+4x8=60$.

Teacher: Why do you think it is so?

Sudhir: Because it has a sign of equality, numbers, arithmetic operation with a variable.

He further added: I followed the sequence of numerals given in the problem.

Teacher: Explain how?

Sudhir: 4 is written in the first place in the problem so he has first added 4 in the equation, and as eight times comes next so he has multiplied 8 later.

Pooja: No, it is $x+4+8=60$

Teacher to both of them: Ok convert your equation into word form and check if it matches with the problem I gave.

Sudhir (after a pause) I am adding Raghav's age to $4x8$

Pooja: I think it is $4+x+8=60$

Teacher: Try to convert your equation into word form.

Pooja:.....

Teacher: who else can do this?

Hamid: I think it is $4+xx8=60$

- Assessing previous knowledge of Bhawna

- Trying to see how student choose and alter their response based on the feed back from peers.

- Helping student to explore to take corrective measure.

- Analyzing the error to find out the reasoning and misconception in learning.

- Helping student to critically analyse his own response.

- Meanwhile the teacher noted down in her diary that Rajesh, Sudhir, Pooja need help in converting word problem into an equation. Also Pooja needs help in understanding the meaning of eight times.

- Assessing how many students can solve the problem.

Teacher: then try to convert it into word form and check.	
Hamid: Here I am adding 4 to eight times of Raghav's age which is equal to Grandpa's age.	

- During discussion teacher realized that most of the students knew what an equation is, but some of them needed help in converting word problem into an equation. Actually she was reflecting on her teaching also while assessing various responses given by her students. So before asking to solve the equation, she gave some simple statements in words and asked students to convert them into equations for practice.

Assessment of Learning

After the completion of one unit or chapter using such techniques the teacher may choose a task say an activity, oral test, quiz or written assessment, to see what the child has learnt about that concept. This can be used for formal recording in terms of levels/stages.

A number of such assessment records in different units will help the teacher to know the progress of a child in one quarter.

The process will continue throughout the year for all the units done in three terms. The final assessment record at the end of the year will include the progress of all the three terms and will give the students and the parents a clear idea of the student's achievement. *The levels/stages will be accompanied by qualitative remarks about the child's strengths/ learning gaps. The nature of reporting and other details related to it is given in Section-III.*

Section III

Some noteworthy elements of continuous assessment

- Continuous Assessment need not be a separate activity or an activity distinct from learning situations and generally it should not break the flow of the class. It is built *into* the learning situation, as an integral part.
- The whole idea of assessment is to help the student learn better. Here, assessment is as much of *teaching strategy used by the teacher, as of learning acquired by the learner.*
- If a teacher spends enough time sensing children's responses, she gathers a collection of nuanced observations on each of her student's learning. Hence continuous assessment is not a one-time activity, which can be done over some hours or some days.
- Continuous Assessment demands that the goal of teaching is to actually help the student learn, not merely to transmit some content which students can somehow reproduce in a test, often through rote memorisation of poorly understood material.

- Detailed and atomised criteria for continuous assessment for every learning situation (sometimes called learning indicators) cannot be given to the teacher by someone distant from the learning situation, because it is the teacher alone who can judge whatever situation or responses come.
- If the activity involves the whole class, whether an experiment or a discussion, then the assessment would not involve a sequential look at one child after the other. Hence the teacher will be able to assess without making the children fearful about being tested.
- Continuous Assessment also requires that the teacher respect children. By respecting, we mean that she believes that if appropriate conditions are created, children have a natural desire and capacity to learn and can show constant growth. The teacher should encourage the children to reflect on their learning so that they can assess themselves and the explanations given by their peers. If a child/class does not respond adequately to a teaching strategy, the teacher needs to change her techniques instead of putting the blame on the learner or learners for non-performance.
- Continuous Assessment can work only in a non-threatening situation where students are not fearful of constant judgement. Free from fear, learners can report their own progress, express their doubts and problems, ask questions to give the teacher evidence of their learning or not-learning. They can, to an extent, assess their own learning as well as each other's learning and even help each other learn better.

Giving comments

Grading of regular work or giving marks is not recommended in continuous assessment, since it means assigning a value to a students' learning at a particular point of time (as is done in exams), even though the student's understanding is constantly growing. It may not even be helpful in improving learning. A teacher may use written work, questions, small quiz etc. in between teaching, to help her assess learning, but this is meant to be used for giving feedback and support to the child. In regular feedback, it is recommended that *no marks or grades should be given*. Instead, only suggestive comments for the child should be given by the teacher to allow the child to see where she needs to put in more effort or attention, for example, "you need to check your data once again. Look at some of your classmates' work to see where you are making a mistake." "Your conclusion is correct but you have not shown how you arrived at it". (This is called '*comment-only marking*'). This actually helps the child understand what is done well and what needs to be improved.

Giving opportunity for Self assessment

One way to truly respect a learner, as an intelligent and thinking human being, is to allow him/her to assess his/her own learning. We do great injustice to children by never allowing them to take charge of their own learning. But genuine assessment of one's own progress can be done only when an individual is

completely free from fear and pressure. We need to strive for a situation where any child can confidently tell the teacher without fear, shame or a diminished self-image—“I could not understand this particular concept very well. Can you help me a bit more, in this aspect?” or, similarly, say confidently —“ I feel that I have learnt it well, and I can even explain it to my classmates well.”

What can the teacher observe to assess a child’s learning?

“When there are many students in a class, you have to come up with creative ways to assess them. Well-designed worksheets, challenging open-book assignments with plenty of time to complete (as homework for example), individual or group projects where the quality of work reveals the effort and achievement of the student—these are all exciting possibilities. If you look at traditional tests or exams, they are the opposite of all this. Poorly designed, emphasizing memory over understanding and application, closed-book, testing performance with severe time restrictions...Examinations conducted by external boards have to be all these things (except poorly designed!) due to the constraints of large systems, but classroom tests made by the teacher or the school can be free of these limitations. Another simple way of getting to know your students better is to allow for discussion and dialogue in class, even a short time each day. The discussion can be an offshoot of what is being covered in the class that week. (It is not meant as an oral test; if it turns into that it will become a source of stress for students!) Keep it as an open-ended discussion around the main topic, allowing for every student to have a valid response, even if all do not get the opportunity to express it. Over the year, make an effort to encourage silent ones, throw specific questions to one or another. Soon, you will develop a sense of where each child is, and this will add to a rich descriptive report. The point is, there are several abilities and aspects to your students other than just getting the answers right, and you as a teacher have to find ways of discovering these.....enjoyment of a subject, self perception of ability, oral expression, ability to explain to others, perseverance with hard problems, neatness, classroom behaviour...reporting on these adds so much richness to the picture of the student.....there is no need to make comparative evaluations; however, there is always a ‘standard’ in mind when you are assessing something. This is the difference between so-called ‘norm referenced’ and ‘criterion referenced’ tests. Can we develop a criterion (instead of a pre-decided norm) against which to evaluate our students, so that we do not have to say, “She is better than 54% of her class at mathematics,” since that is not a very useful statement? Certainly we can.”

(Extract from An Approach to Assessment and Reporting, Kamala V. Mukunda, India Education review, <http://www.indiaeducationreview.com/article/guest-article-approach-assessment-and-reporting-dr-kamala-mukunda-teacher-centre-learnig>)

The teacher can use some of the following for formative assessment:

- Student questions, their answers (oral or written) to questions posed by the teacher
- Students’ written work, notebooks, portfolio (a collection of things prepared by individual child), and their communication skills.

- Children preparing charts, graphs, models, student's drawings.
- Drawings made by the teacher or found elsewhere to draw out their opinions (for example, which out of the illustrated situations is correct)?
- The teacher observing children working in groups (observation of collaboration and cooperation).
- The teacher observing a child working individually (observation of concentration and interest).
- The teacher observing children working on projects (observation of participation).
- Students sharing experiences, observations, questions, opinions, guesses and arguments.
- Designing of an activity by children or an alternative to the activity given by the teacher.
- The teacher making some small change in a performed activity/experiment/situation (even an imaginary situation like a thought experiment) and asking children's reactions.
- Whether a student is having or not having confidence (not coming forward to participate).
- The responsiveness of the class (indicating the level of understanding or connection of the topic with their current level).

Note that one or more of these may be appropriate for a given situation. Not all can be used for every situation.

Some important questions which will help you reflect and discuss with others:

- Are my children completely involved in assigned tasks? Are they able to learn properly? If not, what level they are at?
- Am I able to understand children's varying needs? If yes, what can I do to fulfil those needs?
- Are there children who are unable to reach even the first level of learning? What can I do to motivate and excite them?
- What can I do to improve my teaching strategy to take children from one level to the next?
- How can I motivate children to assess themselves?
- Where am I facing difficulties (e.g. in making children's groups, in choosing activities appropriate to their level, having a shortage of materials or improper materials)?
- What other kinds of help do I need? Who can give me this kind of help (people involved in education, parents, community, other teachers)?
- What can be done for to improve teaching- learning tasks?

Evaluation at the end of a period of learning

The traditional evaluation system is concerned almost entirely with **summative evaluation**, which was done through unit tests, monthly tests and term end tests. These tests focus on the progress made by the pupil during a period of instruction which covered a given section of the syllabus. It is called summative since it comes after instruction has been *completed* and so is not linked to on-going teaching-learning.

The important point is that here the child's learning is judged against some kind of standard set earlier by the syllabus or expected level for that stage or period of learning. Here a value is assigned to the child's achievement and reported to the child, parents, or the school, usually in the form of a report card. Traditionally tests and exams have been doing this kind of evaluation. The spirit of CCE requires that some important changes need to be brought in the way this evaluation is done.

1. It is recommended that summative evaluation may be done after every quarter of learning (every three months). However, the final decision regarding this must be made by the school in consultation with teachers. However, **very frequent evaluations should be necessarily discouraged**, since the continuous assessment should take care of judging and improving gaps in the child's learning throughout.
2. Instead of marks, grades should be assigned. Marks often make faulty judgements and comparisons. A child receiving 70 marks and one receiving 77 marks may not have much difference in their levels of understanding but would be ranked very differently. On a few exam questions, done at one time, rating the totality of a person's learning is mostly faulty. Suppose a child has understood a concept partially and because of that answers an exam question wrongly. She may be given zero, even though she understands much of the concept quite well.

Grades can be given in the following manner:

Academic achievement of the child can be graded on a five point scale of **A+, A, B, C, and D**.

These could roughly correspond to:

D: The child's basic understanding of targeted knowledge/concepts is weak and she needs to be given extra time and help to improve her learning.

C: The child has acquired basic understanding of targeted knowledge/concepts, but still needs to put in more work.

B: The child has achieved a reasonable understanding of targeted knowledge/concepts.

A: The student has achieved a very good understanding of targeted knowledge/concepts.

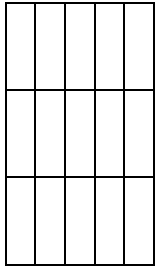
A+: The child has shown extra interest, talent or creativity in some topics covered during this period.

It would be extremely helpful if the teacher can specify in her report when giving such a grade: 'The child's basic understanding of force and pressure is weak and she needs extra help in this'. 'The child has shown very good understanding of biodiversity in her area'. 'The child has a very special interest/ creative in designing experiments related to electricity and magnets.' This is much better than only saying the child is 'very creative', which may not be true in all aspects of learning. Such kind of comments will help other teachers or parents to give the child help and

encouragement in very specific ways where she needs them. Without this, summative evaluations remain at the level of passing judgement alone, which may be often faulty, unfair or blanket judgements. If a child is given an overall grade 'D' alone, without any specific qualitative information about her, it labels her as a poor performer, fails to reflect/encourage about any strength that the child has and does not give an opportunity to improve weak areas. It may seriously damage the child's confidence, motivation to learn and public image. On the other side, a child receiving a blank 'A' grade may be viewed as capable or good in every aspect of achievement and may lead to over-confidence. It is also important to recognise that summative evaluation holds *only* for a given period of evaluation and 'good' or 'poor' grades cannot hold for the child's entire growth period. Her learning and achievement can keep showing drastic variations through the year.

3. To be of real use for learning, results of summative evaluations (for example, tests) must be used to inform the next stages of inputs given to the child and not for labelling alone, which is totally contrary to the real purpose of education. This is not currently done at all, and a child's performance in exams and tests is just treated as the end of a phase of learning.
4. In the period for which we are doing summative evaluation, we must recognise the effort put in by the child, especially in comparison to his/her own efforts in the past. So a 3-point grading scale can be given to rate the effort to learn, for example as shown below:
 - I. **Extraordinary effort:** Extraordinary effort put in by the student in the period of evaluation
 - II. **Normal effort:** Normal effort put in by the student in the period of evaluation
 - III. **More effort needed** The child needs to be motivated to put in more effort
5. Evaluation questions should consciously try not to ask for pre-memorised answers. Otherwise their purpose gets reduced to making students memorise information, which they anyway forget later. Instead, the questions should look for broader understanding, should provoke thinking and even allow open-ended answers, if needed. Also they should give questions that allow children to show even partial understanding or come up with their own arguments. A child giving a good argument or analysis also deserves appreciation, even though she may not have given the 'correct' answer. Given below are two examples of different kind of exam questions that test a student's abilities more than pre-memorised answers.

Example 1:



Find the perimeter of the above shape.

Example 2.

- 1) draw a figure whose perimeter is 10 units (8 units to reduce the level of difficulty)
- 2) How many different figures having a perimeter of 10 units can you make?

[These tasks test the students' ability to construct realistic mathematical models of observed phenomena, and arrive at conclusions based on the model, at varying degrees of difficulty.]

Example 3

TASK a: A goat is tied with a 10-meter rope to the corner of a closed rectangular shed that is 6 meters long and 4 meters wide. The shed is on a field of grass, with the goat on the grass. What is the area of the land that the goat would be able to graze on?

Answer:

TASK b: A goat is tied with a 10-meter rope to the corner of a closed rectangular shed that is two meters long and one meter wide. The shed is on a field of grass, with the goat on the grass. What is the area of the land that the goat would be able to graze on?

Answer:

TASK c: A goat is tied with a 10-meter rope to the corner of a closed triangular shed whose sides are 5 meters each. The shed is on a field of grass, with the goat on the grass. What is the area of the land that the goat would be able to graze on?

Answer:

¹In contrast to questions (1a-c), the question "What is the area of a circle whose radius is 10 meters?" is restricted to testing the students' ability to make mechanical calculations based on memorized formulae.

Such questions do not involve mathematical modelling. The following questions do involve modelling, but since they are standard types, no thinking or special imagination is required in coming up with a model.

A goat is tied with a 10-meter rope that is attached to a stump on the ground. What is the area of the land that the goat would be able to graze on?

A goat is in an enclosed circular meadow whose diameter is 10 meters, and there is a closed circular shed of 3 meters inside the meadow. What is the area of the land that the goat would be able to graze on?

In contrast, the following question demands a moderate level of difficulty in modelling, but not sufficient to distinguish the talented from the ordinary:

A goat is tied with a 10-meter rope to the corner of a closed rectangular shed that is 60 meters long and 40 meters wide. What is the area of the land that the goat would be able to graze on?

If we provide a model for a few sample problems, and extensive practice in applying that model to a large number of standard problems, then give another standard problem, all that the learner has to do is mechanically apply that model to the given problem and proceed to make a mechanical calculation.

Standard problem solving skills are acquirable through repeated supervised practice (i.e., through mere training) and mechanically reproducible without being guided by thought.

Example 4

TASK a: Examine the numbers divisible by 11 (e.g., 11, 22, 33, 44, 55...) and check if the following conjecture is true:

The digits in a number divisible by 11 are identical.

Answer:

Write down a number divisible by 11 that supports your answer. [A more challenging version of the task: "Write down a number that supports your answer."]

Answer:

TASK b: Examine the numbers divisible by 11 (e.g., 110, 121, 132, ... 176, 187, 198, ...) and check if the following conjecture is true:

The last digit in a number divisible by 11 is less than the previous digit.

Answer:

Write down a number divisible by 11 that supports your answer. [A more challenging version of the task: "Write down a number that supports your answer."]

Answer:

(The above examples are taken from 'Assessing Science Talent-K. P. Mohanan and Tara Mohanan' available at <http://www.iiserpune.ac.in/~mohanan/education.htm>)

Recording of Information related to assessment and evaluation

Since continuous assessment is for informing and improving learning as it continues, it is not necessary to produce copious and frequent recorded evidence of all learning to show to people other than the teacher. As shown in our examples, the assessment is often to help see the next step to be taken. However some records can be built for the student's own memory (for example, written work in note-books, graphs, drawings, performance in written tests etc.). There may be some evidence of learning the teacher may want to retain as her personal record, to inform her on a student's progress over time. This may help her in evaluation after a period, to report to the student, parents, or other teachers (for example, the next teacher who takes over a student's learning in the next year, if required) or the school.

Reporting of a child's progress

How can a child's progress be reported to others? We are giving only suggestive strategies here and the final decision must lie with the teacher and the school.

- As discussed before, a report card can show grades A+, A, B, C, D in specific subject areas. These grades will indicate the range within which the child’s learning and performance lies in the performance bands or levels for evaluation.
- Grades should be supported by qualitative statements about where the child needs extra help or shows extra competence.
- A separate rating on child’s efforts can be given on a 3 point scale.
- Qualitative statements about how the child is looked at comprehensively or holistically by a group of teachers should be given.
- It must be noted that that a child’s general abilities (for example, language abilities, comprehension, ability to concentrate, to design, to judge critically, to come up with innovative answers etc.) and attitudes (like motivation, interest, enthusiasm, helpfulness etc.) cannot be judged over a short time period or over a small set of activities. Abilities and attitudes change and evolve slowly over months or years and show their evidences sometimes. Some of these may be very hard to judge at all, so trying to judge the child on every aspect of personality may not be fruitful, and may result in faulty or meaningless judgments. At times in schools, children’s traits are reported on a long list of criteria in report cards, which are often tick-marked without sufficient thought or much evidence.
- At times personal qualities are also given grades. This is faulty, because many such qualities (for example, empathy or helpfulness) cannot be sharply defined or even identified in a person. Assigning a grade-value like A to one student and B to another on such things is problematic because such distinction cannot have a sound basis.

A. Recording and Reporting Personality Related Aspects

The teacher can make a diary where one page is dedicated to every student. It is recommended that every time a teacher notes something special about a child, she makes a note on the student’s page. If she does not do it, she may forget it in the long term. When a report of a student is to be made, the teacher can consult her diary and other teachers. Then all teachers can collectively make a judgement on the student’s personality and how they view her comprehensively. An important input of this part can come from other students or through peer assessment. For example, the whole class can be asked which students they rate highly on being helpful, kind, enthusiastic, sensitive etc. This feedback can even be taken in writing and if many students’ opinions agree on these parameters, they can be reported. *If the teacher does not find anything worthy of reporting, she can leave some blanks in the report.*

Suggestive format of Progress Report in Math for one quarter:

Name of the child Class..... Quarter- I / II/ III

Learning	Topic/theme*	Grade	Comment
Topics taught in this quarter -Knowledge and understanding		B A A+	<i>If her understanding is probed, many areas are strong, but some seem to be memorised without understanding in depth. She is sharp and if she focuses more on understanding of her concepts, her learning would improve substantially.</i>
Abilities	Ability to observe Oral expression Written expression Design skills Quantitative skills Independent-thinking Analytical skills		<i>Since her learning is generally strong, she can help other students in learning.</i> <i>She has good analysing capacity.</i> <i>Her work is less organized and she is encouraged to try being more organized in her work.</i>
Attitudes	Enthusiasm Patience Concentration Cooperation with others Completion of home assignments		<i>She has a good retention of her previous knowledge and would be the first to answer any question asked in class. If you tell her to allow other children to speak, she gets discouraged and may stop participating. It would be good if she can moderate her speaking in class to give other children more chances, without stopping her participation. Her participation can be more towards asking questions or clarifications.</i>
Effort put in		Level II	

Grade scale:

D: The child's basic understanding of targeted knowledge/concepts is weak and she needs to be given extra time and help to improve her learning.

C: The child has acquired basic understanding of targeted knowledge/concepts, but still needs to put in more work.

B: The child has achieved a reasonable understanding of targeted knowledge/concepts.

A: The student has achieved a very good understanding of targeted knowledge/concepts.

A+: The child has shown extra interest, talent or creativity in some topics covered during this period.

Effort scale

Level I- Extraordinary effort: Extraordinary effort put in by the student in the period of evaluation

Level II: Normal effort: Normal effort put in by the student in the period of evaluation

Level III: More effort needed: The child needs to be motivated to put in more effort

* It may be noted that no grades have been given for abilities and attitudes. Only general observations of the teacher are given, not necessarily on all criteria. The teacher writes only whatever she finds noteworthy in the period of reporting.

B. Giving feedback to the Child

On preparing a report, the teacher needs to communicate and share her feedback with the child and parents. This is important and needs to be done carefully and in a constructive, positive manner, so that it does not damage the confidence or self-image of the child. On a regular basis most teachers do provide informal feedback to the child while she/he is involved in a task/activity. What needs to be encouraged through feedback is to make the child to *compete with herself/himself rather than with others*. It should be with reference to – *‘Where was I yesterday or a week ago and where am I today?’* Comparisons between children are damaging. By and large they lead to feelings of *‘I am not good enough’*. Conversely, if a child has done very well, he/she is put under pressure to keep up the performance by teachers and parents, or she may suffer from a sense of superiority over her peers. If some gap in the child’s learning is to be pointed out, pointing it gently and privately is far better than doing it in front of others. Children, like other people, do not mind being corrected but are equally conscious of their public image.

C. What to Share with Parents/Guardians

Parents are likely to be the most interested in knowing how their child is *‘doing in school’*. More often than not, teachers feel they have communicated effectively through comments made to parents such as – *‘can do better’, ‘good’, ‘poor’, ‘needs to put in more effort’*. Such statements do not provide any clear information of what the child can do or has learnt. For parents, these judgements may create faulty impressions about their child’s competence, without actually allowing the parent to understand the child’s difficulties or strengths, or to be able to help the child in any way. If the feedback is to be rich and helpful, it is suggested that the teacher should focus in simple language on:

- What the child can do and where does she/he needs more help. How the help can be given.
- What a child likes or does not like to do.
- Highlighting the child’s extraordinary work with parents, to help indicate areas of success and improvement, along with appreciation of any special strengths, as well as efforts put in by the child.

- Talking on aspects such as cooperation, responsibility, sensitivity towards others, interests, etc. with both the child and parents in a positive manner. If the child needs to improve in some area, instead of saying ‘she is not cooperative’, it will be better to say ‘the child needs to put in more effort towards cooperating with others’.
- Discuss with parents (a) how they can help (b) what they have observed at home about the child that would help the teacher support the child’s learning better.

Role of Teacher Educators/BRC/CRC Personnel in CCE

While organising professional development of teachers like in-service training, following points need to be addressed by educators:

- Trainings are not to be organised in a ‘top-down’ manner, by telling teachers to implement methods or strategies suggested by them for CCE. Teachers need to be suggested ‘do-how’ by taking examples so that they would get opportunities to discuss, reflect and share their problems.
- Teachers must get the chance for peer discussion and sharing of school practices related to CCE. This process would facilitate mutual and participatory learning.
- Clear understanding on *purposes* of assessment and evaluation procedures is required otherwise it would damage the learning process.
- Under CCE, many states have developed various formats for recording and reporting progress of children. Clarity on different aspects of CCE is required while generating any kind of assessment data. Without such clarity, experience has shown that prescribed formats are not helping in teaching-learning process, rather wasting teaching-learning time.
- Teachers are working in varied and often difficult situations, such as large-size classrooms, in difficult-terrain schools, multi-grade classrooms etc. A uniform recording and reporting format would not serve the purpose of CCE. Prescriptive formats that do not give flexibility to the teacher go against the very spirit of CCE.

Role of Administrators in CCE

The CCE approach believes that teaching-learning is a continuous process that depends on dynamic interactions between the learner, her peers and the teacher. The teacher is the person who spends the maximum time with children in the classroom. Therefore the teacher is the best person to judge children’s learning needs, levels and progress. If any record is to be maintained in assessment, it should be mainly to inform the teacher and the choice as to what records she wants to keep, must be with her. Recording of each and every classroom activity is burdensome, impractical and does not help teaching-learning. *The teacher should not be forced to record and report continuously, for all her classes or activities.*

This would require that education officials, superiors and inspectors respect the teacher's autonomy, making her feel responsible and worthy of taking charge of children's learning. CCE can only work in non-threatening situations, for both the teacher and the learners, where the charge of teaching-learning is given to them. Here administrators can encourage teachers to concentrate more on assessing *the process and interaction in their classroom, rather than the product*. They can give them feedback on the processes that go on in class, for which we have provided some examples above.

Besides this, the following can be done:

1. Short duration trainings of 4-5 days at one time may be considered, preferably during vacations so that teachers' and children's learning time is not consumed for trainings.
2. Administrators need to know that they are also a part of teaching-learning process and their role is very important. Regular interactions with teachers to discuss their problems and find solutions can solve many difficulties.
3. It is necessary to give flexibility of time-table to the teacher for designing and evolving her teaching in CCE. CCE cannot work in rigidly bound time-schedules decided by people other than the teacher.
4. Teachers should be encouraged to use locally available resources and opportunities of learning outside the classrooms, which sometimes are not encouraged by administrators.
5. The essence of training programmes attended by teachers, head teachers and other educational personnel must be shared with all implementers. This process would help everyone update their knowledge and also make them understand the rationale of newly recommended changes.
6. Autonomy needs to be given to teachers to undertake the syllabus in a sequence or manner they would like to take. For example, in most of the schools teachers have to take chapters in a sequence suggested by schools. Without this flexibility, a teacher cannot implement CCE or improve her teaching.