PLURILINGUALISM AND MATHEMATICS EDUCATION

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<u>Introduction</u>: Globalization has changed the education scenario of today. Exploration of change & exponential growth of technology have transformed today's societies worldwide into multicultural and multilingual societies and today's demand is holistic education. The new trends that have drawn from this are: Integrated approach to teaching, using a second/foreign language as a means of instruction (Multilingual approach to teaching), amalgamating innovative methods to enrich classroom experiences.

<u>Abstract:</u> Plurilingual approach to pedagogical practices in mathematics has the potential to target high level mathematical competence and abstraction. CLIL (Content and Language Integrated Learning) is an innovative educational approach to learning, a dynamic and motivating force with holistic features. Not only does it image a shift towards curricular/cultural integration but also helps greatly to focus deeper conceptual understanding in Mathematics. Along with plurilingualism, CLIL uses technology to trigger conceptualization, insight and exploration of the subject. This paper highlights (with examples) `Plurilingualism' as one such dimension of CLIL that triggers active approach to the quality of Mathematics education. The importance of teaching mathematics as a language and specific strategies for teaching mathematics vocabulary are discussed. The Singapore Bar Model method as a visual math language which aligns to Concrete-Pictorial-Abstract (C-P-A) approach, serves as a major contributor in raising mathematical competencies and improving problem solving abilities.

<u>Key Words</u>: CLIL, Plurilingualism, Singapore Bar Model Method

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<u>CONTEXT: Why CLIL? Why multilingualism?:</u>

Current mathematics curriculum initiatives in India have been strongly influenced by the globalization and the major shift towards the English medium schools. Language serves as a coherent means of communication and proficiency in multiple languages distinctly paves a strong platform for learning of subjects. Present pedagogical approach depends on a language-rich classroom and communicative competence in learners; this makes it mandatory that the subject mathematics is effectively integrated with languages. **Multilingualism** constitutes the presence of more than two languages within a single speaker. Plurilingualism (Capacity and competence to learn many languages & attain the value of linguistic tolerance) is seen as a catalyst for creative learning in today's super-diverse society. This diversity needs to be transformed from an obstacle into an opportunity, a possibility for new learning in a creative way. The multiple and flexible nature of plurilingualism and its potential helps embrace a holistic, complex view of languages & culture. The concept STEAM replacing STEM today is the foundational global movement that possesses potential to demand a paradigm shift in `teaching learning process'. For educators, there is now a greater need for STEM concepts to integrate with the arts (humanities, language arts, dance, drama, music, visual arts, design, human culture and new media) across the wider curriculum (STEAM).

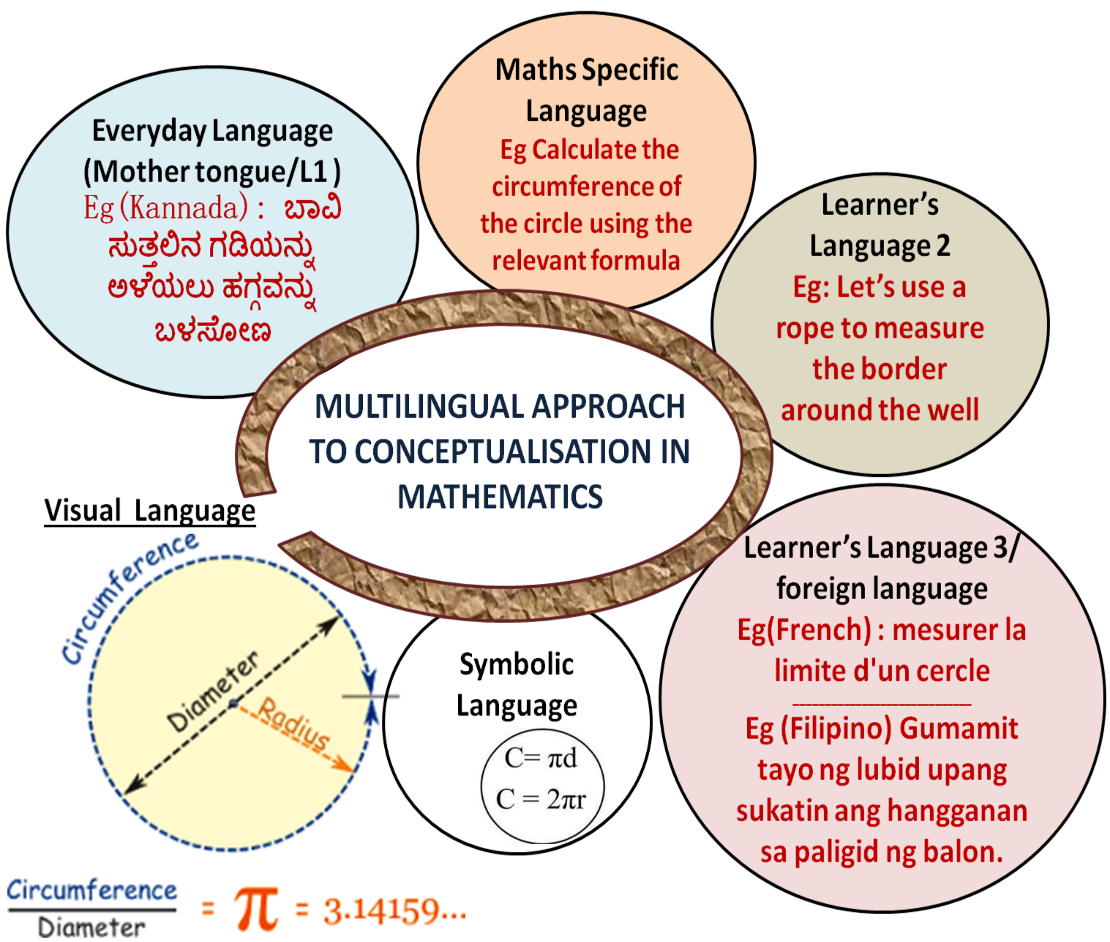
<u>Content and Language Integrated Learning (CLIL):</u> Developed in 1994 by a team led by Prof David Marsh of the University of Jyvaskyla Finland, CLIL (Content and Language Integrated Learning) alludes to teach a core subject using a second and / or third language as a means of instruction (Multilingual approach to teaching), integrating innovative methods for successful learning/ to enrich classroom experiences. CLIL thus acts as a catalyst of change and the primary vision of CLIL is to prove as a best pedagogical practice that can accommodate the linguistic diversity present in different countries and use it for upgrading the quality of learning core subjects. It suggests perfect balance between content and language/s learning and paves a strong platform, both for subject and language related proficiency. The non-language content is developed through the Language 2, Language 3 and the languages developed through the non-language content. When students use L2, L3 to learn/ understand a core subject, a wide range of cognitive processes are activated.

<u>Role of `Language/s in mathematics education</u>

Serving as a medium of communication, a language also plays important role as an instrument of information processing/organization, storing & interconnecting. The oral expressions of an individual are directly/ closely linked to his mental images. Constantly speech interacts with cognitive process. The influence of mother tongue on one's thought process is significant. As a person's perception and expression both link to his linguistic abilities, the learner's orientation in society is also defined /enabled greatly by his Mother tongue. The difficulty in learning mathematics is probably directly proportional to its basic language of instruction. Vocabulary understanding thus is the major contributor to comprehension. The conceptualization in maths is achieved through the use of language/s which children understand in a most stable manner. To develop mathematical proficiency, language of mathematics built on `languages of communication' is a mandate prerequisite. Hence, the language policy should not become a barrier factor for learning a subject, instead must be flexible and supportive.

The positive influences of teaching Maths simultaneously through mother tongue and L2 &/or L3 are plenty. Multilingualism (Eg: the combination of language of mathematics, Mother tongue and L2/L3) facilitates development of cognitive processes.

Multilingualism constitutes the presence of more than two languages within a single speaker. A document on education 'Teaching and learning- towards the learning society'' issued by the European Commission declared `proficiency in three community languages' as a prior objective and suggests different methods of teaching content in a foreign language as a way to contribute to achieve plurilingualism. Plurilingualism is seen as a catalyst for creative learning in today's super-diverse society. This diversity is transformed from an obstacle into an opportunity, a possibility for new learning in a creative way. The multiple and flexible nature of plurilingualism and its potential helps embrace a holistic, complex view of languages & cultures. CLIL thus acts as a catalyst of change. It boosts student's desire and motive towards learning languages. This openness/ candour paves a strong platform, both for subject and language related proficiency.



<u>Theoretical framework of CLIL</u>: According to the seminal definition by Marsh and Langé (2000) "CLIL is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language". CLIL is considered a general, umbrella term which refers to "any dual-focused educational context in which an additional language, thus not usually the first foreign language of the learners involved, is used as a medium in the teaching and learning of non-language content" (Marsh 2002). Both learning and teaching of subject and language are amalgamated in this approach. The distinct trait of CLIL is that, it is so flexible that it can be implemented and practiced in any setting, with any language, in any phase of schooling like kindergarten, college or in the lifelong learning process but with the rigorous and transparent theoretical basis (Marsh Hood Coyle 2010).The primary vision of CLIL is to prove as a pedagogical best practice that can accommodate the linguistic diversity present in different countries by giving equal learning opportunities to all. This alternative approach with innovative methodologies is expected to provide new pedagogical insights (Wolff 2012) in the current system of education. According to expert testimony, CLIL has a benefit for both content and language learning i.e., not only the language competence of the students but also the subject competence is benefited from this approach.

Content and Language Integrated Learning provides teachers alternative ways of teaching for successful learning. CLIL as an innovative approach propagates neither the teaching of content through a different foreign language nor the acquisition of languages through the wide range of content. Nonetheless, the approach will comprise the elements of both language and content.

There is no single blueprint for CLIL, which is ready for use or to distribute to other countries, but the founding principle and format of integrating the teaching and learning of content and language will remain same for all the models and variants in use (Zarobe Lasagabaster 2010).

David Marsh, Do Coyle and Philip Hood (2010), provide the four guiding principles or building blocks, a CLIL Topic or Project Planning Framework called the 4Cs Curriculum Framework based on which the integration of content and language takes place.

<u>1. Content</u>: Content refers to the subject matter or project theme. Successful thematic learning and the acquisition of knowledge, skills and understanding of the subject is the key factor to the content learning. The content does not necessarily be a part of a discrete curriculum but can be taken from any cross-curricular and integrated studies.

<u>2. Communication</u>: This refers to the focus on language part. Content is taught with the aim of creating language awareness. When students acquire knowledge about the content, they acquire language competencies too. Hence both language learning (emphasis on grammar) and language using are considered prominent. CLIL includes learners learning and using language in a way which is diverse from the usual language learning lessons.

3. Cognition: This refers to the 'cognitive abilities, thinking processes', enabling learners to think in higher order and acquire higher order thinking skills. According to the four Cs if CLIL has to be successful, it must aid learners to acquire knowledge and develop new language skills through thinking and critical analysis. Students would develop the abilities to critically scrutinize and evaluate the content taught to them in classrooms. And this thinking ability goes beyond the differences in languages, age and abilities.

4. Culture: This refers to the developing of intercultural understanding and global citizenship by studying through a foreign language to foster international understanding. This factor meets the demands of a pluricultural and a plurilingual world fosters tolerance and understanding among different cultures. 'Otherness' is a vital concept. Recognizing and respecting other foreign /minority languages, giving scope for multilingualism and thereby resulting in the harmonious coexistence of multicultural communities. These 4Cs do not exist as separate elements instead function as a whole. Connecting the four Cs to a cohesive whole is a key to the planning of CLIL. Though CLIL emerged in Europe, it has now become a global trend with its influential approach in empowering the acquisition of foreign or additional language skills or learning of new languages. By 2006, according to a Eurydice report, CLIL had become 'a fast developing phenomenon across Europe'. Most of the European schools are practicing this innovative approach- some on obligatory basis and some as a voluntary option (Wolff 2012).

Conceptualization in Maths: Teaching is reaching. But, deeply ingrained in the process of teaching mathematics is an emphasis on `algorithms and shortcuts' instead of `conceptualization'. Bypassing conceptual understanding may increase difficulty as students may not absorb the underlying foundational mathematical principles. Also, the connected mathematical concept at `higher complexity level' becomes a cause of `math-phobia' in students. The process of learning mathematical concepts must be structured/sequenced in such a way that it supports the building of strong base to help students naturally arrive at algorithms (without the need of memorization) and discover alternate method/ shortcuts. Attaining mastery over a concept should be tested by the ability to elaborate on all the steps involved in a process and illustrate with examples, connecting to related concepts.

Mathematics as a language & Language of mathematics: Mathematics is a discipline where non-verbal communication, visual and graphic materials, technology are extensively used. Its language has a typical grammatical structure and is rich in words that are confined to this specific field. Maths has a specific register, vocabulary/ set of discourses which is similar across many languages.

According to Hejny, The language of mathematics is an arbitrary system of signs by means of which, the realization of thinking and communication is carried out. How the images and thoughts (Concepts) are transformed into their corresponding linguistic representations (Mathematical language), is the point on focus during the teaching of mathematics. Any possible deficiency at any stage might impair the transformation mentioned above. The words /signs assigned with wrong conceptions/ ideas or absent conceptions; failure to form linguistic representation for a conception- these impair the relationship between concept formation and mathematical language.

Pimm and Keynes mention that the mathematical language can refer to *language of communication in maths classroom*The vocabulary used for mathematical ends (mathematics register)* Specific language of Math textbooks* The symbolic language in written form. Language of mathematics in a broader sense, indicate the inner self speech (Language exclusively used by an individual during problem solving, communicative speech during problem solving (person to person). Using the languages in the most suitable manner, the mental images can be both conjured up and controlled in the service of mathematics.

Research work by Gardella and Tong, considering the spectrum of `Language development ( Both mathematical language and communicative language)' under the investigation of mathematical learning, throws light on `The ways in which one's linguistic expressions can expedite/promote the preliminary learning and communication of basic concepts and skills by aiding children create their conceptualization of mathematics using language they comprehend'. With this as a foundation, they then can proceed to mathematical symbolism which represents the most refined level of communication.

Though mathematics requires precise instructions during its teaching, due to the usage of several verbal & non verbal ways of illustrated explanations, (namely exemplification, rephrasing, analogies, body language, gesture, repetition, representation and visualization) enhancement of both receptive and productive skills of associated languages (L2, L3) is ensured. The use of `interactive strategies which focus more on learner's comprehension and feedback' becomes a part of the teaching, if a new/ foreign language is chosen as the means of communication. This minimizes the difficulty, due to the tendency to use `short and simple' sentences.

Difficulties with the mathematical register: At higher primary level, when algebra is introduced, the students are exposed to variety of algebraic expressions / equations. (Specific mathematical language) . Several word problems are complexly stated.

Eg1: Consider 8m-m. Here, students rarely visualize the coefficient of m as 1. They reach at the answer 8m, as they consider m as zero times m. Similarly when given the expression 8m-8. To identify the common factor 8, and write it as 8(m-1)

Eg 2: How much is (2m-7n) more than (-7m-5n)

By How much is (2m-7n) more than (-7m-5n)

The above two problems are different from each other, but the framing is such that, one who is not very good in grammar cannot understand it and interpret correctly.

Specific strategies for teaching mathematics vocabulary:

Creation of Math dictionary; Charts / Resource vocabulary banks (In video or audio forms) that contain mathematical vocabulary, words and phrases help enhance mathematical thinking. These words are to be accompanied by illustrations.

Use of manipulative: Mathematics content becomes comprehensible when the important tools called `Manipulatives' are used. These physical objects that are used as teaching aids to engage students in the hands on learning of mathematics, provide students ways to construct concrete models of `abstract mathematical concepts'. Thus manipulatives help enhance students' confidence by giving them an opportunity to test and confirm their reasoning. Being very useful for solving problems, these make mathematics interesting and enjoyable. Strong visual manipulatives such as Pictures, demonstration, modeling, role play, video etc help students grasp the language of mathematics, in an efficacious way. They can be used during introducing, practice work and remedial teaching of a concept.

Modified explanations (Teacher Talk): It is important to give explanations by using variety of words for a single concept. Speaking slowly and using clear articulation with necessary intonation, to place stress on important new concepts is also equally necessary. Consider the example of teaching `properties of numbers'. Commutative property of addition/ multiplication **m x n = n x m**. The concept can be better understood, if the word meaning of **commute** is explained as –'**Both ways'** –`move to and fro'. This also can be aided by a pictorial representation, as visual language itself acts as an integrating agent. The technology has a great role in this regard. The videos prepared by teachers to illustrate and explain the derivation of a formula or its application serve as valuable resources. In such videos, the key concepts can be illustrated using the demonstration in more than one language (Including language of mathematics), simultaneously. Visual pop-ups in a foreign language will motivate students to pick up the language fast, accelerating its learning.

Similarly, The associative property of addition or multiplication **a x (b x c) = (a x b) x c. The word meaning of associate as `couple/ connect with something'**

Distribute- give a share or unit to each of a number of recipients.

A boss wanted to gift Rs 987each to his 100 employees. On the day he distributed the amount, 8 were absent. So he distributed Rs 987 x 92 and the balance amount Rs 987x 8 was distributed the next day. Hence 987 x 100 = 987 x 92 + 987x 8

Multiplication using brackets is the best example of distributive property of multiplication over addition. Consider the normal multiplication shown below.

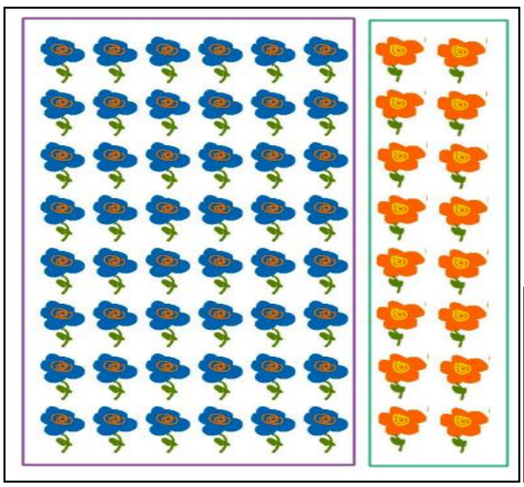
2759 x 876

16554 = 2759 x 6

193130 = 2759 x 70

2207200 = 2759 x 800

2416884 = (2759 x 800) + (2759 x 70) + (2759 x 6) = 2759 x 876



Blue flowers: 8 x 6

Orange flowers: 8 x 2

Total Flowers: 8 x 8 = 8 x 6 + 8 x 2

<u>Using sentence frames/ Use prompts to support student responses</u>: Math sentence frames serve variety of purposes. They provide the support for language learners and students involve fully in math discussions called `Number talks'. These contextualize and bring meaning to vocabulary; provide a structure for practicing and extending language skills. Prompts help language learners to get started, while responding to a question.

<u>Bilingual approach to teaching of Math concepts- Story telling way</u>

Storytelling in mathematics can be a medium for creating a classroom in which mathematics is appreciated, understood, and enjoyed. Storytelling coupled with bilingualism, aided with technology is very interesting. Use of transcribed dialogue/narrative, subtitles, translanguaging , as a support to technology (Eg: GeoGebra software useful in maths) are the requisites. For a teacher it invites: Spotting an appropriate problem / deep mathematical content, creating an interesting story on the concept, planning for bilingual approach, integrating the technology.

<u>Planning collaborative/ group works in which `student-grouping' is done based on their maths and language skills</u>: Students must be involved in group learning; the grouping must be done by not only including students of varying skill levels in mathematics but also varying second language competence.

<u>Singapore Bar model Method-A visual math language</u>

<u>Visual Language</u>: Visual language was used to encode meaning, from the most ancient cultures and ever since throughout history. It is a communication system that comprises of visual elements. It is a well known fact that `Speech' as a means of human communicative activity includes visuals. Richard Gregory suggests that ``Perhaps the ability to respond to absent imaginary situations'' as our early ancestors did with paintings in rock ``represents an essential step towards the development of abstract thought''. Ably describing the perception, comprehension and production of visible signs/ signals is the extended application of visual language. Visual expression in various manifestations can go beyond traditional obstructions to any language and serve as a change agent in today's era of technology. Visual language has the potential to serve as a universally understood language. The domain of its structural units has in it, the shape, pattern, direction, orientation, colour, form, motion, texture, scale, angle, space and proportion. The concepts in a spatial context are truly represented by the elements in an image.

<u>The Bar Model Method</u> is a distinctive feature of the Singapore Primary Mathematics curriculum. It was innovation in pedagogy developed by the ministry of education, Singapore to address a nationwide problem. It aimed raising mathematical competencies and improving problem solving abilities in students. Singapore made dramatic improvements in its mathematics performance, following the introduction of this method.

In this method, students learn to solve word problems by drawing either part-whole or comparison models to represent the quantities given in word problem. The use of bar models provides students to communicate their understanding of the problem, using a visual representation. This visual representation gives students a clearer idea of how the known and unknown quantities in the word problem are mutually related. And enhances students' flexibility in manipulating the given data and deciding the operations to use, hence making the understanding of the word problem more accessible, deeper. Students need not search for key words such as `altogether'/ `left' instead use this method as strategy to guide their approach whilst building their mathematical reasoning capacity

The Bar model Method is aligned to the Concrete-Pictorial-Abstract (C-P-A) approach, which is the key pedagogical approach adopted in the teaching of mathematics across primary schools in Singapore. It is pictorial in nature and bridges the concrete to the abstract by allowing students to first visualize and understand the problem before progressing to the abstract where numbers, notation and symbols are used.

Part –Whole model to solve word problems involving fractions

Example 1: Whole is given. Part is asked

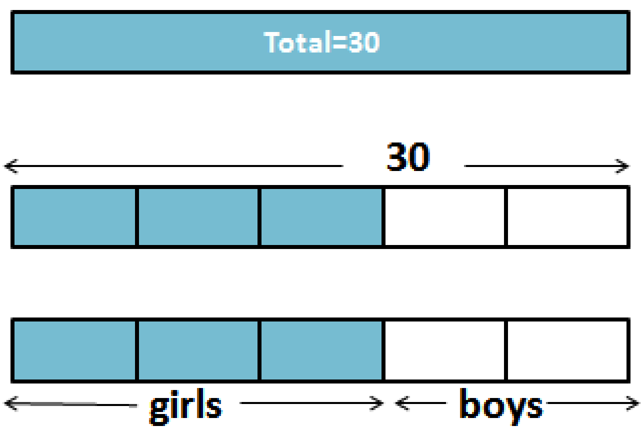
There are 30 students in a class. 3/5 of the students in the class are girls and the rest are boys. Find the number of boys.

First get a sense of the data, then draw a bar model to represent this data.

Step 1- Total number of students is known. So, first draw a bar to represent the total number as a whole.

Step 2: The fraction given is 3/5. Show this by dividing the bar into 5 equal parts and shade 3 among these.

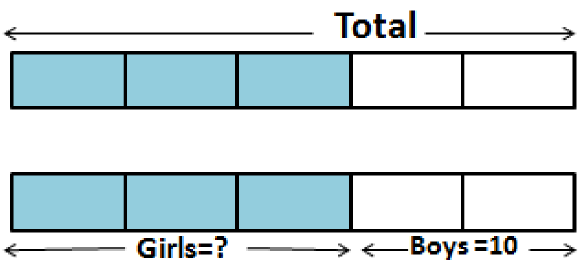
Step 3: Transfer the data from the word problem into the bar model and analyze as follows



The whole quantity of 30 students is represented by 5 units; Three shaded units represent the number of girls, So, remaining 2 unshaded units represent number of boys; 5 units=30; 1 unit=30 divided by 5=6; 2 units= 6x2=12; Hence the required solution to the problem is ` There are 12 boys'

Variation of example 1: The quantity for a part is given

Given that 3/5 of the students in a class are girls. Remaining 10 are boys. Find the number of girls.



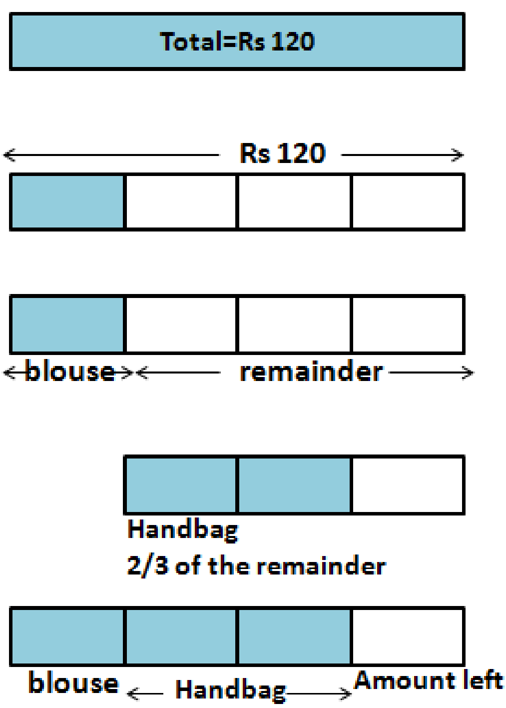
In example 1, the whole was given. By multiplying (3/5) by the whole 30, we can get the quantity for the part. But in variation of example 1 also, students tend to similarly perform (3/5)x10, which is the most common mistake. This is because; they don't understand the relationship between the quantities given. Drawing a bar model will help students relate the quantity 10 visually to the number of units representing the boys, hence helping them solve the problem correctly.

<u>**Comparison model** to solve word problems involving fractions</u>

Example 1: Jane had Rs 120. She spent (1/4) of her money on a blouse and (2/3) of the remainder on a handbag. How much money did she have left?

First get a sense of the data, then draw a bar model to represent this data.

Step 1- Total amount of money is known. So, first draw a bar to represent the total as a whole.



4 units =Rs 120

1 unit= Rs 120 divided by 4=Rs 30

Jane had Rs 30 left

Solving this word problem in normal method, would involve numerous calculations as shown below

- <u>Method 1</u>

(1/4) x Rs 120 = Rs 30

She spent Rs 30 on blouse

Rs 120-Rs 30 = Rs 90

(2/3) x Rs 90 = Rs 60

She spent Rs 60 on hand bag

Rs 120-Rs 30- Rs 60 = Rs 30

- <u>Method 2</u>

1-(1/4) = (3/4)

(2/3) x ((3/4) = (1/2)

She spent (1/2) of her money on the handbag

(1/2) + (1/4) = (3/4)

1-(3/4) = (1/4)

She had (1/4) of her money left

(1/4) x Rs120 = Rs 30

Students who have difficulties performing four operation algorithms on fractions, can use `Bar model method' comfortably and stably. This makes it accessible to more students.

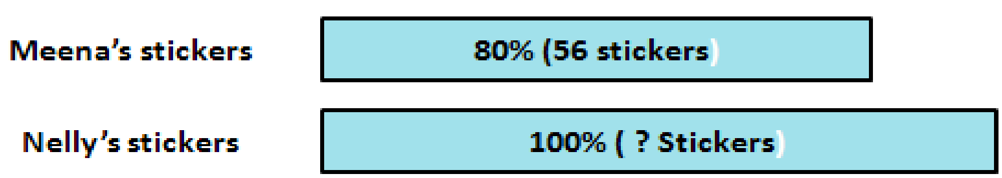
<u>**Comparison model** to solve word problems involving percentages</u>

Meena has 56 stickers. She has 80% as many stickers as Nelly. What percentage of Meena's stickers does Nelly have?

Sensing the data:

Step 1:Meena has 80% as many stickers as Nelly. So Nellay has more stickers than Meena

Step 2:The given percentage compares Meena's stickers to Nelly's stickers. So, we take Nelly's stickers as the base (100%)



Analysis

Can we say that Nelly has 20% more stickers than Meena? This would mean that Nelly has 120 % as many stickers as Meena

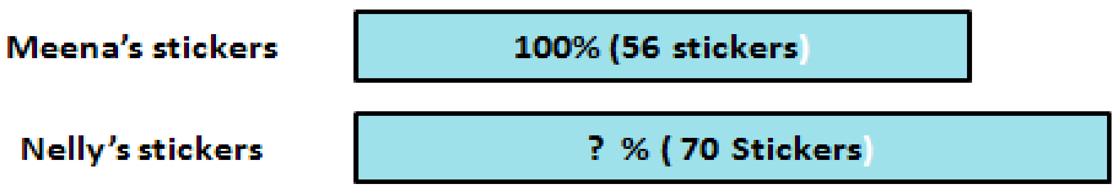
Interpretation

80% → 56

1% →56/80=0.7

100% →0.7x100 =70…..Nelly has 70 stickers

To find Nelly's stickers as a percentage of Meena's stickers, we now take Meena's stickers as the base (100%)



56→ 100%

1→(100/56)%=m

70→(m x 70)%=125%

Hence, Nelly has 125% of Meena's stickers (and not 120%)

<u>State of equilibrium between mathematics and language:</u>

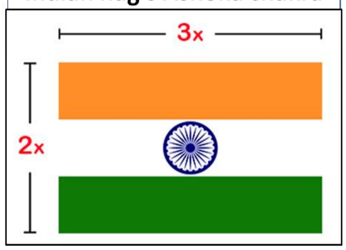
With its dual focus, CLIL efficiently strikes a balance between language and didactics of Mathematics. 4C (Content, Communication, Cognition, Culture) framework of CLIL are carefully interconnected at every stage.

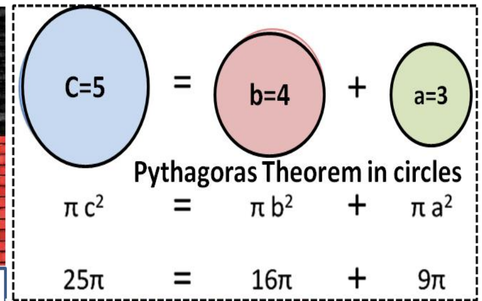
CLIL provides opportunities to study content of maths through different perspectives. It triggers deeper understanding, insight and exploration of the subject. Marsh claims that `CLIL does not only promote linguistic competence. Because of the different thinking horizons which result from working in another language, CLIL can also have an impact on conceptualization, literally how we think' (Marsh et al,1999)

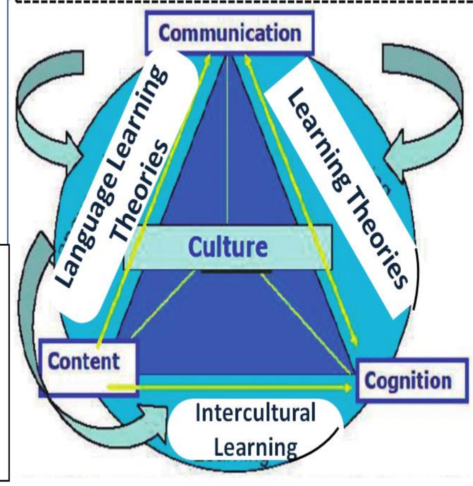
It prepares a student for future life by simultaneously encouraging cognition in Maths & proficiency in languages. The CLIL aspects uniquely range from mother tongue of the student to the learning environment and school curriculum through a variety of socio cultural variables.

<u>Circle time</u>: 12 students form a clock. By how many times is the distance travelled once around the circle greater than that of through the centre from one to its exact opposite, (Eg: straight from 3 to 9)

Australian Aboriginal flag has a circle at the centre. Collect information on Aboriginal culture/ language. Compare the significance with that of Indian flag's Ashoka chakra



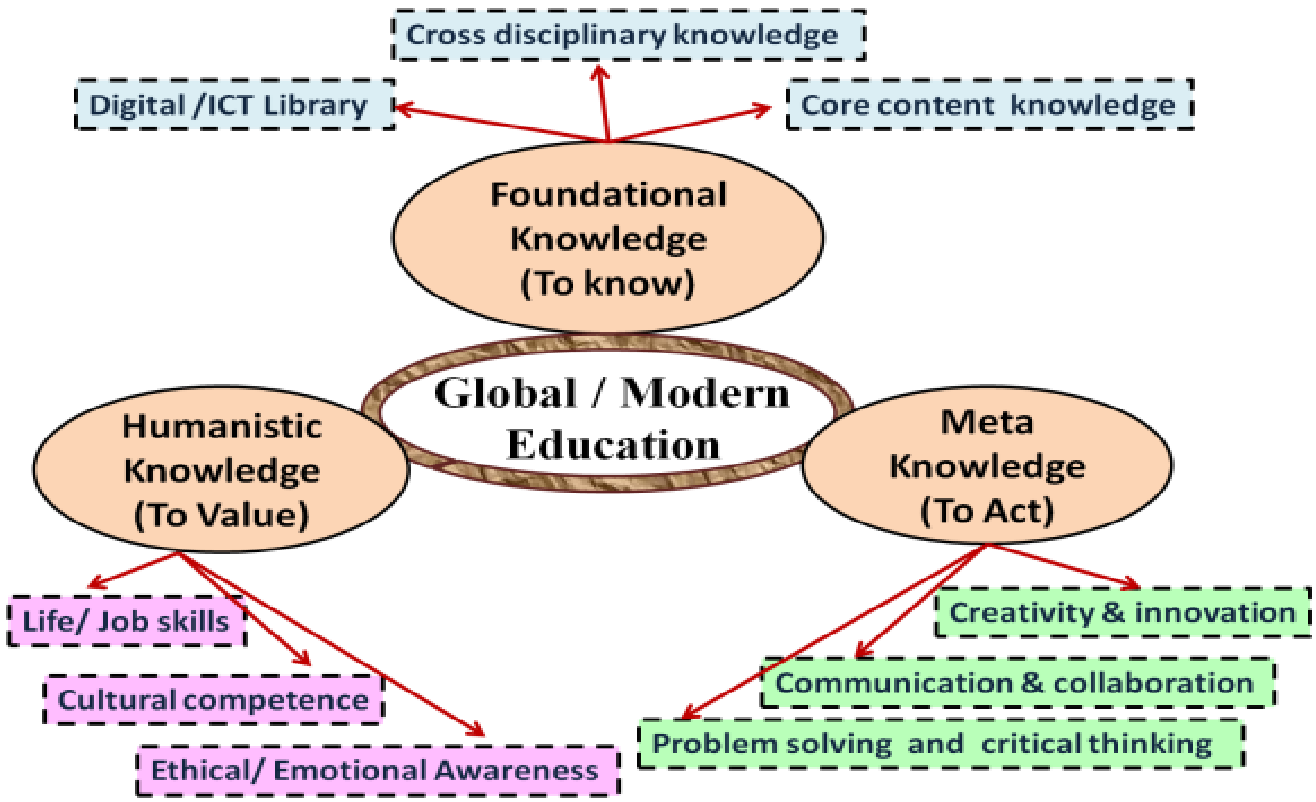




<u>Internationalism (Globally integrated, collaborative & creative projects):</u>

``In an integrated world, integrated learning is increasingly viewed as a modern form of educational delivery designed to even better equip the learner with knowledge & skills suitable for the global age''- Peeter Mehisto

CLIL is the innovative educational approach that supports linguistic/cultural diversity. It is a dynamic and motivating force with holistic features. Unlike the traditional school curriculum, it represents a shift towards curricular integration and internationalism. The cross disciplinary knowledge gained through `globally integrated collaborative projects', possess high potential to take a student to significant height in his real life. These lead to concrete accomplishments and enable students to connect with new ideas, sources, and people. Students exhibit greater responsibility for learning, synthesize their learning from multiple subjects, directly communicate and involve in activities with other speakers of CLIL language. The ability to spontaneously switch between three or more languages while learning mathematics is seen as a resource for communicating mathematically. `Plurilingual approach to maths education', which aims at softening the boundaries between languages/ cultures is a part of cross curricular education. Such innovative practices help transform the teaching learning process and target higher educational goals (Shown below).



Differentiated Instruction:

CLIL compendium stresses its role in complimenting individual learning strategies, diversification of teaching methods, enhancing learner motivation and attitude to both the language and Mathematics.

When mathematics is learnt through a different/new language, the learners are exposed to different perspective on a single content area. Also the usage of different vocabulary encourages additional associations, giving space to `go beyond the text book'. Various techniques/ methods adopted for teaching mathematics through a foreign language trigger the active approach and promise a deeper understanding of foundational concepts.

CLIL uses `Experiential learning' which is inductive, learner centered, co-operative & activity oriented. Critical factors in effective experiential learning are- personalized reflection about an experience and the formulation of plans to apply learning to other contexts. The emphasis in experiential learning is on the process of learning and not on the product.

CLIL encourages `independent study' wherein a range of instructional methods are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement.

Scaffolding, which supports differentiated instruction, is one of the best methods of CLIL. Scaffolding targets on *Building on a student's existing knowledge, skills, attitudes, interests and experience *Responding to different learning styles *Fostering creative and critical thinking *Repacking information in user friendly ways *Challenging students to take risks.

Concluding Remarks

Exploration of change & exponential growth of technology at global level, have transformed today's societies worldwide into multicultural societies. As highlighted in this paper, Plurilingual approach to pedagogical practices in mathematics has the potential to target high level mathematical competence and abstraction. It plays a significant role in conceptualization in mathematics and features personalized teaching. Today, CLIL has become a global trend with its influential approach in empowering the acquisition of foreign additional language skills. Evidently, A planned approach to strengthen the connecting bond between different disciplines/ subjects/ cultures/ countries paves way for universal fraternity. Integrated curriculum has such a potential to bring in world brotherhood, cross cultural respect, tolerance, harmony, collaboration. Most of the schools are practicing the CLIL innovative approach voluntarily.

As an educator, I feel empowered and equipped to take forward such transformational practices.

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