What is Interdisciplinary Team Teaching and Content and Language Integrated Learning?

TOOLS FOR SKILLS
INTEGRATED LEARNING OF ENGLISH AND FORESTRY
TEACHER TRAINING
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What is Interdisciplinary Teaching?

Educational experiences are more authentic and of greater value to students when the curricula reflects real life, which is multi-faceted rather than being compartmentalized into neat subject-matter packages. Real-world problems are complex, so no single discipline can adequately describe and resolve these issues.

Interdisciplinary instruction entails the use and integration of methods and analytical frameworks from more than one academic discipline to examine a theme, issue, question or topic. Interdisciplinary education makes use of disciplinary approaches to examine topics, but pushes beyond by: taking insights from a variety of relevant disciplines, synthesizing their contribution to understanding, and then integrating these ideas into a more complete, and hopefully coherent, framework of analysis.

In dealing with multi-faceted issues such as new drug development, genetically modified foods, and health care access, interdisciplinary perspectives are needed to adequately address the complexity of the problems and to forge viable policy responses.

Interdisciplinary teaching is different from multi- or cross-disciplinary teaching in that it requires the integration and synthesis of different perspectives rather than a simple consideration of multiple viewpoints.

Some Definitions

Cross-disciplinary analysis – examines an issue typically germane to one discipline through the lens of another discipline (i.e., how physicists explore music, sociological perspectives on the purpose of religion).

Multi-disciplinary analysis – examines an issue from multiple perspectives, without making a concerted effort to systemically integrate disciplinary perspectives.

Inter-disciplinary analysis – examines an issue from multiple perspectives, leading to a systematic effort to integrate the alternative perspectives into a unified or coherent framework of analysis.

What Makes Interdisciplinary Teaching Different?

A single disciplinary perspective often has limitations in that it is driven by the norms and framework of a particular discipline without consideration and incorporation of alternative views. The single disciplinary view can lead to hegemony which prevents critical assessment of both their own and other perspectives. In contrast, interdisciplinary education draws on multiple disciplines to acquire a deep and thorough understanding of complex issues and challenges students to synthesize what each of the disciplines offers before attempting to design efforts to resolve noted concerns.

Engaging students and helping them to develop knowledge, insights, problem solving skills, self-confidence, self-efficacy, and a passion for learning are common goals that educators bring to the classroom and interdisciplinary instruction and exploration promotes realization of these objectives. Interdisciplinary teaching fosters advances in cognitive ability. The main distinct educational benefits of interdisciplinary learning include the ability to recognize bias; think critically; tolerate ambiguity; acknowledge and appreciate ethical concerns.

Interdisciplinary teaching helps to uncover preconceptions by introducing students to subject matter from a variety of perspectives that challenge their existing notions. It also fits with recent advances in learning science about how to foster learning when students bring powerful pre-existing ideas with them to the learning process. According to some authors the interdisciplinary forms of instruction help students overcome a tendency to maintain preconceived notions. Interdisciplinary teaching accomplishes this goal in two ways. Firstly, by helping students identify insights from a range of disciplines that contribute to an understanding of the issue under consideration. Secondly, by helping students develop the ability to integrate concepts and ideas from these disciplines into a broader conceptual framework of analysis.

When students put aside their pre-existing notions they position themselves to learn facts more readily and are more open to adopting a range of methodologies that promote understanding. Teachers can thus spend more time exploring issues with them that promote significant learning.

Significant Learning takes place when meaningful and lasting classroom experiences occur. According to some authors when teachers impart students with a range of skills, and insights about the educational process that students will see as meaningful and salient to them they promote student engagement in the learning process and greater learning occurs. There are 6 key elements of the educational process that lead to significant learning and each of these is a common feature of interdisciplinary forms of instruction:

- Foundational Knowledge – acquiring information and understanding ideas;
- Application – acquiring an understanding of how and when to use skills;
- Integration – the capacity to connect ideas;
- Human Dimension - recognition of the social and personal implications of issues;
- Caring – acknowledgment of the role of feelings, interests, and values;
- Learning How-to-Learn – obtaining insights into the process of learning.

Interdisciplinary instruction fosters the acquisition of foundational knowledge, promotes integration of ideas from multiple disciplines and provides insight on how to apply knowledge all of which advance students' understanding of how to learn. Moreover, students are encouraged to account for the contribution of disciplines that highlight the roles of caring and social interaction when analysing problems. Thus, the very structure of interdisciplinary learning is consistent with the core features of significant learning, so students are expected to find interdisciplinary education engaging and thus an effective way to advance their understanding of topics under investigation.

Interdisciplinary teaching helps students develop their cognitive abilities - brain-based skills and mental processes that are needed to carry out tasks. Interdisciplinary learning fosters a number of cognitive attributes. It helps students to:

- Acquire perspective-taking techniques - the capacity to understand multiple viewpoints on a given topic. Students develop an appreciation of the differences between disciplines on how to approach a problem and their discipline specific rules regarding viable evidence. This leads to a broader understanding of the issue under investigation;
- Develop structural knowledge - both declarative knowledge (factual information) and procedural knowledge (process-based information). Each of these forms of knowledge are needed to solve complex problems. Thus, as students enhance their knowledge formation capacity, teachers/trainers can engage them in conversations dealing with more complex issues;
- Integrate conflicting insights from alternative disciplines. Each discipline adopts different mechanisms of analysis and approaches to evaluate the viability of their insights. Obtaining a clear understanding of problems with roots in multiple disciplines requires the capacity to integrate ideas and this skill is advanced by interdisciplinary learning.

Interdisciplinary instruction helps students understand why conflicts commonly arise over; the causes and consequences of an issue and, the ideal way for policy to address the issue of concern. When learning is confined to a single disciplinary perspective ambiguity is often considered either a shortcoming of the analytical framework or evidence that assumptions need to be adopted to provide a clear prediction. Interdisciplinary teaching advances the notion that ambiguity results from alternative perspectives on issues that are advanced by different disciplines rather than a shortcoming of a particular discipline. Thus, students acquire a better understanding of the complexity of problems of interest and the associated challenges of solving them.

Interdisciplinary teaching promotes understanding when students learn in heterogeneous ways. Students bring multiple forms of intelligence to the learning process due to their diverse backgrounds, interests, experiences, talents, and values. Interdisciplinary teaching opens academic conversations to ideas from a range of disciplines so all students should be able to relate and contribute to the dialogue. Thus, the likelihood of connecting with the full array of the students in the classroom is enhanced by interdisciplinary learning.

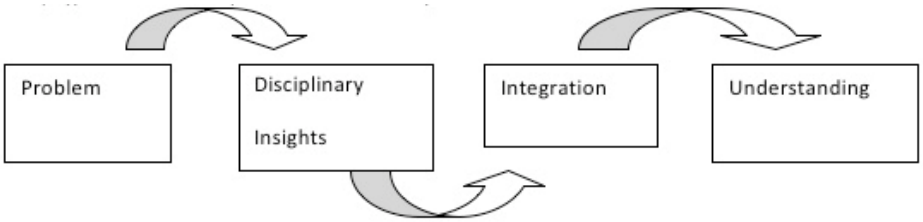
Moving from a disciplinary oriented form of teaching to being an interdisciplinary educator is not too costly for four reasons. First, most educators are familiar with the methodologies and empirical practices of related disciplines so acquiring the necessary cross disciplinary knowledge to become an interdisciplinary teacher will not be overly stressful or time consuming. Second, most educators are familiar with task modelling - an instructional strategy that promotes learning through observation - which is fundamental to interdisciplinary teaching since most students are unfamiliar with interdisciplinary approaches to learning, so instructors do not have to learn an entirely new form of pedagogy. Third, synthesis of insights from across disciplines, the most demanding element of interdisciplinary teaching, is an activity that most scholar-educators have engaged in previously or can learn to do with modest effort. Finally, instructors can determine the share

of the course that is interdisciplinary, so they insert into their course the level of interdisciplinarity that is ideal for them given their experience with this form of teaching and the nature of the course they are leading.

How to Make Your Classroom Interdisciplinary?

Effective design and implementation of interdisciplinary classroom explorations, regardless of the level or type of class, entails the following six key steps:

- Pre-instructional planning - Prior planning establishes the topics to be examined in an interdisciplinary manner, and allows the educator to acquire the requisite knowledge, and to develop an action plan - codified in a set of notes that may include open ended questions–to guide the classroom experience;
- Introduction of the methodology to students - explain to students the nature of interdisciplinary, rather than discipline based learning. Impress upon them the importance of integrating insights and approaches from multiple disciplines to form a framework of analysis that will lead to a rich understanding of complex questions. Make clear that you will be modelling how to approach an issue in an interdisciplinary manner, and that ultimately they will be asked to master this skill. Allay student fears by noting they will be given assignments that help them reach this objective by practicing approaching topics as interdisciplinary investigators;
- Take it to the classroom - model how to explore questions from an interdisciplinary perspective. There are 9 basic steps to follow to engage students in an interdisciplinary exploration:
    1. **DEFINE** problems, issues, topics or questions that permit interdisciplinary examination;
    2. **PRESENT** a clear rationale for taking interdisciplinary approach including the advantages to be gained;
    3. **IDENTIFY** relevant disciplines;
    4. **CONDUCT** a literature review (what is known on the topic from each of the disciplines);
    5. **DEVELOP** a command of each relevant discipline set out the analytical structure central to each discipline, identify key underlying assumptions, and methods of evaluation;
    6. **STUDY** the problem and generate insights including predictions from each of the relevant disciplines;
    7. **IDENTIFY** conflicts between and/or areas of complementary between the insights offered from each discipline;
    8. **CREATE** common ground by developing a cohesive framework of analysis that incorporates insights from the relevant disciplines in a systematic manner;
    9. **COMBINE** disciplinary insights to construct new more integrated understanding of the problem.



- Practicing interdisciplinary thinking - students practicing interdisciplinary thinking by re-enacting what they observe in the classroom is an effective way to acquire this higher order cognitive skill. Students can be assigned the task of rethinking an issue discussed in a discipline based manner in class by bringing another discipline to bear and then attempting to synthesize and integrate their analysis;
- Provision of feedback - the aim should be to provide the students with feedback on their ability to understand and delineate the underlying structure and analytical framework of other relevant disciplines (*multidisciplinary thinking*) and to produce an integrated analysis (*interdisciplinary thinking*);
- Assessment - students should engage in self-evaluation periodically by rating their ability to: set out the structure of multiple disciplines that are well suited to the problem of interests, synthesize insights from multiple disciplines, and integrate ideas across disciplines. This information will allow them to gauge their progress, identify challenging areas, to seek help, and set goals for improvement.

Assessing Interdisciplinary Learning

There are two widely recognized means of assessing student ability to analyse in an interdisciplinary manner; the pre-and-post student survey method, and the grading rubric approach. Student surveys can be designed and used to capture perceptions (subjective information) and the capacity to think in an interdisciplinary manner (objective information). Grading rubrics provide objective feedback on the status of both multidisciplinary and interdisciplinary thinking.

Pre-and-post student surveys can be administered to students at the beginning and again at the end of the course to explore their level of understanding of fundamental principles in their discipline, in relevant related disciplines and their capacity to synthesis and integrate across disciplines. This information can then be used to identify if a gap exists between perceived and actual understanding both at the beginning and at the end of the class. The exit survey can also include questions on whether they thought the interdisciplinary form of instruction was worthwhile or if they believe they would have experienced greater knowledge gains if the pedagogical approach was confined to a single discipline.

Grading rubric is typically an evaluation tool or set of guidelines used to promote the consistent application of learning expectations, learning objectives, or learning standards in the classroom, or to measure their attainment against a consistent set of criteria. In instructional settings, rubrics clearly define academic expectations for students and help to ensure consistency in the evaluation of academic work from student to student, assignment to assignment, or course to course. Rubrics are also used as scoring instruments to

determine grades or the degree to which learning standards have been demonstrated or attained by students.

In courses, rubrics may be provided and explained to students before they begin an assignment to ensure that learning expectations have been clearly communicated to and understood by students, and, by extension, parents or other adults involved in supporting a student's education. Rubrics may take many forms, but they typically include the following information:

- The educational purpose of an assignment, the rationale behind it, or how it connects to larger concepts or themes in a course;
- The specific criteria or learning objectives that students must show proficiency in order to successfully complete an assignment or meet expected standards. An oral-presentation rubric, for example, will establish the criteria—e.g., speak clearly, make eye contact, or include the description of the main characters, setting, and plot—on which students will be graded;
- The specific quality standards the teacher will use when evaluating, scoring, or grading an assignment. For example, if the teacher is grading an assignment on a scale of 1 to 4, the rubric may detail what students need to do or demonstrate to get a 1, 2, 3, or 4. Other rubrics will use descriptive language—does not meet, partially meets, meets, or exceeds the standard, for example—instead of a numerical score.

Rubrics are generally designed to be simple, explicit, and easily understood. Rubrics may help students see connections between learning (what will be taught) and assessment (what will be evaluated) by making the feedback they receive from teachers clearer, more detailed, and more useful in terms of identifying and communicating what students have learned or what they may still need to learn. Educators may use rubrics through an assignment to help students assess what they still need to do or demonstrate before submitting a final product. Rubrics may also encourage students to reflect on their own learning progress and help teachers adapt instruction, academic support, or future assignments to address distinct learning needs or learning gaps. In some cases, students are involved in the co-creation of rubrics for a class project or for the purposes of evaluating their own work or that of their peers.

Since rubrics are used to establish a consistent set of learning expectations that all students need to demonstrate, they may also be used by teachers as a way to maintain consistency and objectivity when teaching or assessing learning across grade levels, courses, or assignments. Common rubrics or common assessments are used to promote greater consistency in the application and evaluation of learning. In most cases, common rubrics are collaboratively developed by a school faculty, academic department, or team. Some schools have common rubrics for academic subjects, while in other schools the rubrics are utilized across all the academic disciplines. Common rubrics and assessments can also help schools, departments, and teaching teams refine their lessons and instructional practices to target specific learning areas in which their students tend to struggle.

Grading rubrics are most effective when used in a two-step method. First, students are asked to analyse an issue or problem using the analytical framework of at least two

disciplines. This entails multidisciplinary analysis since integration and synthesis is absent. Second, students are now required to present an interdisciplinary analysis of the same problem, using a synthesized framework that integrates the disciplinary insights used in the first step. The grading rubric is used to evaluate both multidisciplinary and interdisciplinary skills.

In the following table an example of an interdisciplinary grading rubric is given, designed to assess understanding an interdisciplinary unit. The score of 4 indicates that the teacher has excellent working knowledge of interdisciplinary unit design and is ready to implement a unit in the classroom. The score of 3 indicates that the teacher has moderate knowledge of interdisciplinary unit design but needs to focus more on the alignment of skills, assessments, and essential questions. The score of 2 indicates that the teacher is struggling to make meaningful connections among the disciplines and needs to define a clearer organizing centre for the training material. The score of 1 indicates that the teacher should revise the process of interdisciplinary subject design.

Criteria	4	3	2	1
Rationale	Precisely stated purpose with relevant supporting arguments; identifies reasons why design is selected.	Purpose stated.	Vague statements of purpose.	Purpose missing or ineffective.
Interdisciplinary component	Meaningful and effective connections to other disciplines.	Explores connections to other disciplines.	Limited or forced connections to other disciplines.	No connections to other disciplines.
Designed to benefit the learner	Aim and benefits to specific student population made clear.	Aim stated.	Benefits unclear.	No purpose stated.
Essential questions	Highlight conceptual priorities; enable smooth transitions between disciplines; highly relevant to title/focus; embrace	Clear to students; sequenced; enable transitions among questions; related to unit title/focus; include some	Elicit limited responses; unevenly exhibit transitions between questions; vaguely relevant to title/focus; do not make standards clear;	Not investigative; elicit literal responses; composed of arbitrary sequences lacking transitions; no relation to

	appropriate standards; fulfill outcomes.	standards; address some expected outcomes.	leave outcomes too vague to be attainable.	title/focus; do not fulfil outcomes.
Skills	Presented as precise, clear, and matched to needs of population; address essential questions; matched to standards throughout; written as descriptive verbs with specific techniques; variety of producer and consumer activities.	General skills identified; partially target population; address most essential questions; some attempt at matching standards; written as action verbs; some variety of activities.	Not appropriate for target population; unrelated to essential questions; identified but not matched to standards; written as verbs; limited variety of activities.	No attention to skills; no link to essential questions or standards; overemphasis on a single activity.
Assessment	Correlated to essential questions and specific skills; age-appropriate activities; a range of engaging activities that match learning styles; relevant to the goals and purpose of the unit.	Most activities directly correlated to essential questions and specific skills; inconsistent match with developmental level of the students; relevant to the goals of the unit.	Inconsistent correlation to essential questions and skills; not age-appropriate; tasks not relevant to students or to the goals of the unit.	No correlation to essential questions and skills; not age-appropriate; directions unclear and lacking in focus; irrelevant to goals of the unit
Procedures	Classroom activities target skills; assessments clearly linked to essential questions; follow a clear and logical sequence	Classroom activities clearly connected to essential questions but lack connection to skills and assessments; inconsistent focus.	Classroom activities strongly connected to skills and assessments but not relevant to essential questions; lack of flow from	Essential questions, if posed, not addressed by activities; direction and focus unclear.

			activity to activity.	
Use of resources and materials	Range of engaging and appropriate print, human, and technology resources to enhance the unit.	Evidence of appropriate resources to fulfil outcomes.	Limited use of resources.	No evidence of resources.
Mechanics and language usage	Unit presented in a clear, consistent format; error free.	Unit presented in a format; few errors.	Unit presented in a cumbersome, unclear format; scattered mechanical errors.	No format; multiple mechanical errors.

Challenges Facing Interdisciplinary Teachers

Educators who successfully introduce interdisciplinary forms of instruction into the classes should overcome a number of obstacles that can be surmounted by interested educators. Those who make the transition should:

- Become sufficiently knowledgeable in relevant related disciplines to be able to comfortably introduce and guide an interdisciplinary study;
- Find the appropriate level of interdisciplinary complexity. For most students, integrating introductory level concepts from multiple disciplines will add sufficient depth to their understanding;
- Convince students that the additional costs of thinking in an interdisciplinary manner are worth it;
- Avoid polarity which occurs when instructors in an interdisciplinary setting become territorial about their content area and its role in the analysis because they are threatened by another discipline's viewpoint;
- Offer a balanced examination of theoretical and methodological assumptions underlying each discipline that is part of the interdisciplinary examination;
- Promote the synthesis of ideas from a variety of disciplines leading to an integrated form of analysis. Acquiring the ability to synthesize is a key objective of interdisciplinary teaching. Moreover, helping students learn to synthesize is the greatest challenge for an educator to navigate or overcome on the path to interdisciplinary examination of topics.

Interdisciplinary Team Teaching

Team teaching involves a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach is better.

There are three main types of team teaching: (1) two or more teachers loosely sharing responsibilities; (2) team planning, but individual instruction; and (3) joint planning, instruction, and evaluation of learning experiences. New teachers may be paired with veteran teachers. Innovations are encouraged, and modifications in class size, location, and time are permitted. Different personalities, voices, values, and approaches spark interest, keep attention, and prevent boredom.

The team-teaching approach allows for more interaction between teachers and students. Teachers evaluate students on their achievement of the learning goals; students evaluate teachers on their teaching proficiency. Emphasis is on student and teacher/trainer development, balancing initiative and shared responsibility, specialization and broadening horizons, the clear and interesting presentation of content and student development, democratic participation and common expectations, and cognitive, affective, and behavioural outcomes. This combination of analysis, synthesis, critical thinking, and practical applications can be done at all levels of education.

Working as a team, teachers model respect for differences, interdependence, and conflict-resolution skills. Team members together set the course goals and content, select common materials such as texts and films, and develop tests and final examinations for all students. They set the sequence of topics and supplemental materials. They also give their own interpretations of the materials and use their own teaching styles. The greater the agreement on common objectives and interests, the more likely that teaching will be interdependent and coordinated.

Teaching periods can be scheduled side by side or consecutively. For example, teachers of two similar classes may team up during the same or adjacent periods so that each teacher may focus on that phase of the course that he or she can best handle. Students can sometimes meet all together, sometimes in small groups supervised by individual teachers or teaching assistants, or they can work singly or together on projects in the library, laboratory, or fieldwork. Teachers can be at different sites, linked by video-conferencing, satellites, or the Internet.

Breaking out of the taken-for-granted single-subject, single-course, single-teacher pattern encourages other innovations and experiments. For example, students can be split along or across lines of sex, age, culture, or other interests, then recombined to stimulate reflection.

Benefits and Challenges of Interdisciplinary Team Teaching

Team teaching boasts many pedagogical and intellectual advantages: it can help create a dynamic and interactive learning environment, provide instructors with a useful way of modelling thinking within or across disciplines, and also inspire new research ideas and intellectual partnerships among teachers/trainers. To experience the full benefits of team teaching, however, instructors must adjust their course planning and classroom management strategies to accommodate a collaborative approach.

Team teaching requires different preparation than traditional, single-instructor courses, particularly concerning the organizational aspects of course management. Careful and extensive planning can help instructors prevent disagreements regarding assignments, grading procedures, and teaching strategies. Planning meetings also allow instructors to familiarize themselves with their partner's material, helping make the class a true team effort from the start. Reaching this consensus may take a lot of time and compromise, in the end the extra effort will result in a far more successful intellectual experience.

The purpose of a team-taught course, from an educational standpoint, is to push students to achieve higher levels of synthesis and integration in their study of new material. It is, therefore, vitally important for instructors to model the process of integration by interweaving teaching partners' perspectives into each presentation. Often students are assigned projects that require them to integrate the material individual instructors have presented. Consequently, students have expressed a desire for teachers to demonstrate the same practice of integration in their own lectures and presentations. Teachers often integrate their different disciplinary approaches by referring to each other in lectures and presentations. By showing respect for each other's ideas, even when they may disagree, they are able to keep students interested and engaged in all aspects of the course material.

Some teaching teams take a more direct approach, and assign one instructor during each class meeting the task of making connections among different course topics. Whichever method instructors choose, giving students the opportunity to observe integration in action helps them better understand instructors' expectations, as well as improve their own learning outcomes.

Team-teaching allows students to observe high-level intellectual debate among colleagues. When such debates are successful, students learn to disagree without hostility. They also learn how to encounter new material through a variety of perspectives, and gain a practical knowledge of different academic disciplines. Watching instructors debate using different methodological approaches allows students to discover the advantages of different disciplines, and to understand which methodology best suits a particular line of inquiry. In addition, interdisciplinary debate encourages students to apply the skills of integration and collaboration to other courses and assignments.

One of the benefits that team teaching offers students is an increase in the amount of feedback they receive from instructors. Students often worry whether instructors will apply consistent grading standards. Conflicts can emerge regarding the standards for evaluating student work, and instructors sometimes struggle to bridge their differences regarding evaluation procedures or criteria. To ensure fairness in grading, some instructors design a specific grading rubric, tailored to the needs of a team-taught course.

In addition to increased preparation time, successful team teaching also requires ongoing meetings among instructors to review and reassess their goals for the course. For many team teachers, meetings become the testing ground for the sort of dialogic instruction they present in class. Meetings allow instructors time to plan upcoming courses, but also to reflect upon their progress thus far, and to compare their impressions regarding student response and engagement.

Students in team-taught courses learn new material by approaching it from many different perspectives. The dialogic structure of class meetings often stands in stark contrast to the lecture format to which many students and instructors are accustomed. Instructors must, therefore, adjust their teaching practices to invite many different responses to a particular question or issue.

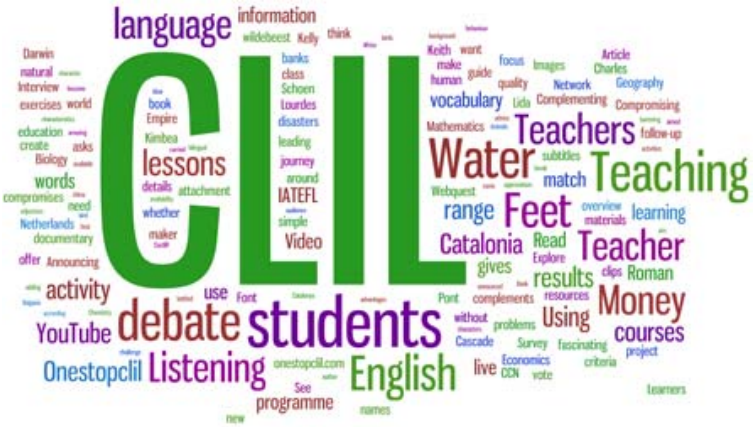
Although many students enjoy the diversity of voices and viewpoints that emerge in the team-taught classroom, others struggle to figure out the key points of a lesson when teachers/trainers choose to present many possible solutions to a problem.

Team teaching can have a highly positive impact on student learning outcomes, largely due to the increased opportunity for student participation that team teaching provides. The presence of more than one instructor in the classroom increases the occasions for student-teacher interaction. More importantly, a collaborative teaching environment invites students to take a more active role in the learning process. Because team teaching encourages a variety of perspectives on a topic, students are more likely to feel they can make valuable contributions to class discussions.

Part of the challenge of team teaching is putting yourself in a position where your own authority and expertise on a certain topic may have to take a backseat. Teachers/trainers must make the shift from being “experts” to being “expert learners,” for in the collaborative classroom, teachers and students join in a shared process of intellectual discovery. Instructors generally agree that being prompted to look at a topic from a different angle can be one of the most rewarding experiences of participating in a teaching team. Teachers can “get out of their own conceptual boxes” and learn new approaches that will enhance their own research and writing. In addition to creating new research opportunities, team teaching can also encourage instructors to hone their pedagogical skills.

Team teaching gives teachers the opportunity “to teach in a different way, and to learn in a different way.” It allows instructors to hone their pedagogical skills and develop new topics for research and scholarship. The benefits of team teaching extend to students as well, improving learning outcomes by offering increased student-teacher interaction, as well as a multi-dimensional approach to subject matter. Ultimately, the advantages of team teaching far outweigh the time and energy it requires.

CONTENT AND LANGUAGE INTEGRATED LEARNING



CLIL stands for Content and Language Integrated Learning and refers to teaching subjects such as science, history and geography to students through a foreign language.

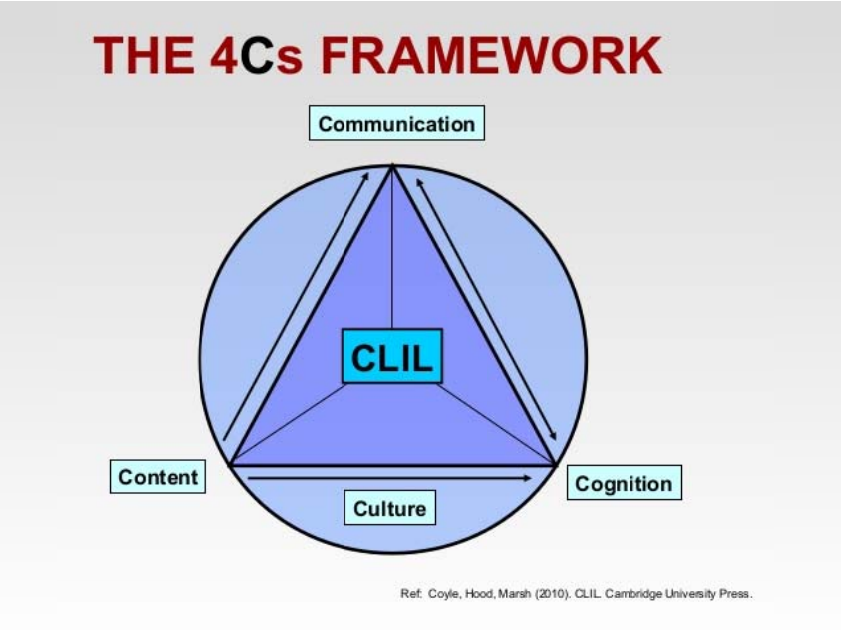
The term CLIL was coined by David Marsh, University of Jyväskylä, Finland (1994): "CLIL refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language." It's an approach for learning content through an additional language (foreign or second), thus teaching both the subject and the language. The idea of its proponents was to create an "umbrella term" which encompasses different forms of using language as the medium of instruction.

CLIL describes an evolving approach to teaching and learning where subjects are taught and studied through the medium of a non-native language. The experience of learning subjects through the medium of a non-native language is more challenging and intensive as there is more exposure to the language and learners acquire knowledge and skills in different areas of the curriculum. In CLIL, learning a curriculum subject in a second, third or sometimes fourth language involves drawing on effective pedagogical practice from a range of different educational contexts. Curriculum subjects apart from languages are taught through the target language.

CLIL is fundamentally based on methodological principles established by research on "language immersion". This kind of approach has been identified as very important by the European Commission because: "It can provide effective opportunities for pupils to use their new language skills now, rather than learn them now for use later. It opens doors on languages for a broader range of learners, nurturing self-confidence in young learners and those who have not responded well to formal language instruction in general education. It provides exposure to the language without requiring extra time in the curriculum, which can be of particular interest in vocational settings." It can be very successful in enhancing the learning of languages and other subjects, and developing in the youngsters a positive 'can do' attitude towards themselves as language learners.

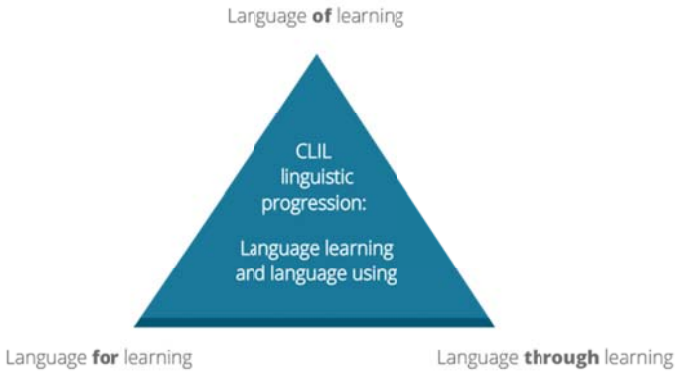
CLIL aims

The CLIL aims are often referred to as the 4 Cs (Coyle) – *Content, Communication, Cognition and Culture* (the 4th C is sometimes called Citizenship or Community).



The 4 Cs Conceptual framework was developed from a holistic perspective to provide a basis for bringing together different facets of CLIL in order to support the development of CLIL pedagogies.

The 4Cs framework requires reconceptualization of language from language learning *per se* towards an integrated model which actively involves the learner in using and developing the so-called language triptych: language **of** learning, language **for** learning and language **through** learning.



Language OF learning is based on analysis of the language needed for learners to access basic concepts and skills, relating to the subject theme or topic – content language such as discipline-specific vocabulary/terminology, structures, phrases and grammar related to the topic;

Language FOR learning builds up learner's repertoire linked to meta-cognitive skills for learning in real contexts. In CLIL settings this means how to learn effectively and develop

skills required for cooperative group work, asking questions, debating, thinking, memorising, etc.

Language THROUGH learning: extending students' language functions and notions, further development - linguistics skills, advanced presentation skills, conference skills (e.g. strategies for coping during the Q and A session at a conference).

CLIL aims to: introduce learners to new ideas and concepts in curriculum subjects; improve learners' performance in both curriculum subjects and the target language; encourage stronger links with the citizenship curriculum; increase learners' confidence in the target language; make the content subject the primary focus of classroom materials; enable learners to access curriculum subjects by modifying lesson plans to take into account students' ability in the target language; provide cognitively challenging materials from the beginning; provide scaffolding to support learning of content and language.

Competences for lifelong learning

The European Commission has decided to promote the training of teachers to "...enhancing the language competences in general, in order to promote the teaching of non-linguistic subjects in foreign languages". In this context, competence is defined as demonstrated ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. According to the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

The European Framework for CLIL Teacher Education determines eight independent key competences for lifelong learning. They all emphasise critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, and constructive management of feelings. The key competences are:

- communication in the mother tongue;
- communication in foreign languages;
- mathematical competence and basic competences in science and technology;
- digital competence;
- learning to learn;
- social and civic competences;
- sense of initiative and entrepreneurship;
- cultural awareness and expression.

This European Framework for CLIL Teacher Education aims to provide a set of principles and ideas for designing CLIL professional development curricula. Additionally, the Framework seeks to serve as a tool for reflection. It is proposed as a conceptual lens and model, not as a prescriptive template. This framework is the result of a CLIL curriculum development project financed by the Empowering Language Professionals Programme of the European Centre for Modern Languages. As CLIL programmes in the Council of Europe member states differ from country to country, in their organisation, content, intensity and choice of languages, the developed European Framework for CLIL Teacher Education is focused on **macro-level universal competences** of CLIL educators.

Curriculum development

In the literature on curriculum design at least five different functions can be distinguished. These functions are also relevant for the development of a CLIL curriculum:

1. A curriculum **defines an educational programme**. Curricula list the contents of a programme which the learners are expected to acquire within a fixed period of time. Content is sequenced in the curriculum, i.e. built according to different parameters depending on desired learning outcomes and existing learner competences.
2. A curriculum is seen as a source of **innovation** by education authorities and/or higher education providers. New subjects or fields can be introduced; already existing content can be renewed. A new curriculum contains renewed learning aims, content and methodological guidelines.
3. A curriculum serves as a **tool for planning and carrying out teaching-learning sequences**. A detailed curriculum helps teachers, for example, to plan, prepare and carry out a sequence of learning. An educationally grounded curriculum is fundamental for constructing modules and designing courses.
4. A curriculum is used as an **instrument to evaluate teaching and learning**. Curricula are issued by ministries of education or higher education authorities. These authorities need to evaluate and assess what is going on in a learning environment. Curricula also serve as terms of reference for the individual teacher to evaluate and improve his/her own teaching, and for students to evaluate their progress and to guide them in planning for improved learning.
5. A curriculum serves as a means for regulating, **standardising and comparing teaching and learning** at all levels. The curriculum is an important instrument for streamlining standards at regional, country or European level. Curriculum development is also a means for building high quality CLIL programming.

The overall major challenge, in the development and implementation of a teacher education curriculum in CLIL, is its **integrative nature**. This is the case at all levels of education – primary, secondary, tertiary, vocational and adult. CLIL seeks to teach two subjects in one - a content subject and a language. Content subjects, such as mathematics and an additional language, are usually taught separately.

With the exception of primary teachers, other educators are often trained to teach just one subject be that a content subject or a language, as opposed to both. Even where teachers are trained in both a content subject and a language, training in the integration of language and content is not widespread. Teachers undertaking CLIL will need to be prepared to develop multiple types of expertise: among others, in the content subject; in a language; in best practice in teaching and learning; and, in the integration of CLIL within an educational institution.

The Framework defines key terms used in it within a specific scope of meaning:

1. **Attitude** - (preconceived) ideas or beliefs which a person has towards other persons, situations, members of society, ideologies, events, etc. Attitude can be also defined as *'a disposition to react favourably or unfavourably to a class of objects.'* Attitude becomes visible through behaviours and an outward expression of beliefs or feelings

and can either support or impede learning. Critical reflection and dialogue about the socially constructed nature of attitude can help individuals to better understand and manage their own attitudes and learning, as can meta-affective and meta-cognitive awareness.

2. **Assessment** - in education, assessment is intended to be a tool that supports learning and helps measure progress being made toward achieving planned learner outcomes. The term assessment is sometimes used interchangeably with the term *'evaluation'*. Assessment more often relates to individual students' achievements, whereas 'evaluation' deals with systems, materials, procedures and their values. A distinction is made between **formative and summative assessment**. In formative assessment the student's learning (attitudes, skills, habits and knowledge) is analysed with the student over longer stretches of time and used to improve learning and teaching. Summative assessment is based on discrete-point testing of a student's learning, often at the end of a unit or year of study. Summative assessment procedures are often linked to external tests validated by statistical measures and are often used to make very important decisions about students (e.g., pass/fail) and/or teachers (e.g., adequate/inadequate teaching performance). Whereas formative assessment helps build learner and teacher autonomy including the capacity to better manage learning, so-called 'high-stakes' summative assessment is considered by many researchers to lead to significant negative consequences including reduced learning outcomes.
3. **Evaluation** - The term is often used *'to denote the process of collecting evidence about programmes, systems, procedures and processes'* and the interpretation of that evidence with respect to stated or desired objectives. For example, evaluation provides information about the quality of a curriculum, a study programme or teaching. Like assessment, evaluation makes use of formative and summative approaches; but instead of assessing the student's individual efforts and results these are analysed with respect to wider 'system-based' issues such as a whole programme, significant parts of the programme or key features such as how teachers teach and how groups of students learn.
4. **Grounded professional confidence -** knowing when one's thinking and skills are sound enough to make one's own decisions, and taking action thereon when appropriate, whilst maintaining a high level of professional standards and advancing one's own learning.
5. **Knowledge -** the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.
6. **Learner autonomy** - *'the ability to take charge of one's own learning'*. Learner autonomy includes a *'capacity for detachment, critical reflection, decision-making and independent action'*.
7. **Learning outcomes** - an outcome describes the enduring knowledge, skills, abilities and attitudes which allow a student to exercise and apply learning in his or her personal and professional life. More simply expressed, it is what a student knows and can do as a result of what he or she has learnt. Outcomes are often defined in terms of competences.

8. **Professional Learning Communities** - *'a professional learning community is an inclusive group of people, motivated by a shared learning vision, who support and work with each other, finding ways, inside and outside their immediate community, to enquire on their practice and together learn new and better approaches that will enhance all pupils' learning'*. Professional learning communities tend to: have shared values and visions; assume collective responsibility for student learning; foster reflective professional inquiry; facilitate collaboration, which includes open and frank debate; promote group, as well as individual learning.
9. **Skills** - the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as *cognitive* (involving the use of logical, intuitive and creative thinking) or *practical* (involving manual dexterity and the use of methods, materials, tools and instruments).

Target Professional Competences

The main target professional competences which the CLIL teachers should acquire or further develop are:

1. Personal Reflection

Commitment to one's own cognitive, social and affective development is fundamental to being able to support the cognitive, social and affective development of students.

In this respect, the CLIL teachers should be able: to explore, and articulate their own understanding of, and attitudes towards, generally accepted principles of teaching and learning; to explore and articulate their understanding of, and attitudes towards content and language learning, as well as learning skills development in CLIL; to define their own pedagogical and content (subject field) competences, and related developmental needs; to define their level of language competence according to the Common European Framework of Reference for Languages; to explore and articulate ways of working with learners to jointly identify teacher and student socio-cultural, personal and vocational learning needs; to explore and to articulate the necessity to cooperate with colleagues and other key CLIL stakeholders, and describe mechanisms for cooperation; to work according to the principles of grounded professional confidence; to develop and update their own professional development plan; to explore and manage the multiple roles and identities of a CLIL teacher; to explore and manage the impact of one's own attitudes and behaviour on the learning process.

2. CLIL Fundamentals

An understanding of the core features of CLIL, and how these link with best practices in education, is central to the CLIL approach, as are building inclusive and constructive relationships with students and other stakeholders.

The CLIL teachers should be able: to describe core features of the CLIL approach (definition, models, planned outcomes, methodology, driving principles; to describe common misconceptions vis-à-vis CLIL; to contextualise CLIL with respect to the school, regional

and/or national curriculum; to articulate and discuss CLIL with school's internal and external stakeholders; to describe strategies for integrating CLIL and existing school characteristics.

3. Content and Language Awareness

In CLIL, successful content learning is particularly dependent on language: enhanced language learning is dependent on content learning. Research-based knowledge of the interdependence of language and cognitive development facilitates both content and language learning.

CLIL teachers should be able: to identify the appropriate content to be taught and obstacles to content learning; to view content through different cultural perspectives; to deploy strategies to support language learning in content classes; to create opportunities for reinforcing content learning in language classes; to apply strategies for fostering critical thinking by students about content and language; to apply strategies for fostering in students the habit of linking new learning with their personal experience (e.g., language, content subjects, personal experience and the out-of-school world); to promote learner awareness of language and the language learning process; to describe how the first language can support additional language learning; to model strategies for making the transition from monolingual to bi-/multi-lingual teaching and learning; to devise and implement strategies that take into account key concepts such as (critical) discourse, domains and registers, basic interpersonal communication skills, cognitive academic language proficiency in order to promote language and content learning, as well as learning skills development; to describe the implication of age for language learning and use; to link language awareness issues to content learning and cognition; to scaffold language learning during content classes; to propose instructional strategies that take into account social constructivist theory, including exploratory and other forms of discourse that promote dialogic teaching and learning; to draw on knowledge and theories from language learning fields such as second-language acquisition; to propose instructional and learning strategies.

4. Methodology and Assessment

In CLIL aspects of good pedagogy are applied in a new manner. Due to the challenges of learning through an additional language, many aspects of good pedagogy require enhanced and detailed scaffolding. A wide range of knowledge and skills relating to methodology and assessment are integrated in order to create meaningful and supportive learning experiences for students.

<u>Building learner capacity</u>

In order to develop the learner capacity, the CLIL teachers should be able: to support learners in building their capacity (to self-motivate; to self-assess so that they can become more reflective and autonomous; to constructively give, receive and use teacher and peer assessment/feedback; to cooperate with the teacher so as to reflect on, and improve learning; to identify and analyse preferred learning styles).

<u>Co-operating with colleagues</u>

In order to effectively co-operate with colleagues, the CLIL teachers should be able to cooperate with colleagues so as to reflect on and improve learning.

Deploying strategies

CLIL teachers should be able to: deploy strategies for the co-construction of knowledge with learners, for cooperative learning and fostering critical thinking; support continuous language growth through a repertoire of didactic strategies; deploy blended learning approaches in the CLIL classroom.

Building direction and focus

CLIL teachers should be able: to work with learners to jointly identify learners' needs in CLIL; to design CLIL modules and lessons within the context of a given curriculum; to identify key concepts of content subjects and make them accessible to learners by modifying teaching to take into account students' diverse language competences and needs; to set outcomes together with learners regarding language, content and learning skills; to maintain a triple focus that supports content, language and learning skills development; to build on prior language and content knowledge, skills, attitudes and experiences of learners.

Building safe and meaningful learning experiences

CLIL teachers should be able: to support students in managing the affective side of learning through an additional language; to create authentic and meaningful learning environments and experiences for students (e.g., group work, peer teaching and work placement).

Assessing

CLIL teachers should be able: to articulate CLIL-specific assessment needs and goals, and to develop and implement related assessment tools; to identify what learners already know; to guide learner reflection on previously agreed upon content, language and learning skills, goals and achievements; to guide learners in using portfolio-based approaches (including the European Language Portfolio) as tools for fostering learning, teaching and

assessment; to use formative and summative assessment strategies; to support content, language and learning skills development; to use benchmarking in supporting progress in learning; to introduce the concepts of self-assessment and peer-assessment to support learners in taking greater responsibility for their learning.

5. Research and Evaluation

A dynamic CLIL teacher is a learner who follows a personal path of enquiry, reflection, and evaluation. This provides an active model for students to develop the ways and means of learning through their own research and evaluation. These are powerful tools for improving teaching and learning.

CLIL teachers should be able: to discuss classroom and learner research methodology (e.g., action research); to conduct action research in collaboration with colleagues and other stakeholders, including students; to articulate key research findings relevant to CLIL and

learning in general (e.g., second language acquisition research, psychology of knowledge and evidence-based teaching); to critically analyse research articles on CLIL; to use benchmarking (national or international) when interpreting and planning research and evaluation; to describe strategies and instruments for self, peer and student evaluation of their teaching practices; to critically interpret research and evaluation results.

6. Learning Resources and Environments

CLIL requires CLIL-specific learning resources, and enriched learning environments. These are highly integrative, multi-layered and cognitively demanding, yet are balanced by enhanced scaffolding and other support systems. These help students build a sense of security in experimenting with language, content, and the management of their own learning.

CLIL teachers should be able: to maintain a triple focus on content, language and learning skills; to design and use cognitively and linguistically appropriate learning materials; to create criteria for developing CLIL resources (including multimedia) that embed the core features of CLIL; to describe criteria and strategies for using non-classroom and non-school learning environments; to assess learning resources and environments and to identify potential difficulties and solutions to overcome these; to articulate techniques for developing cooperative networks aimed at choosing, creating, adapting and accessing materials or developing learning resources and accessing learning environments; to help students build cross-curricular links.

7. Classroom Management

CLIL classroom management aims to facilitate the integrated learning of content, language and learning skills. It requires specific knowledge about classroom dynamics and management techniques and about how these affect learning in CLIL. Classroom management also centres on helping students to access intrinsic motivations for learning. This is partly done by enabling them to share responsibility for classroom management and the co-construction of learning.

CLIL teachers should be able: to use diverse classroom set-ups to promote student communication, cooperative learning and leadership; to use appropriate language for classroom interaction in order to manage classroom proceedings to recognise and make use of opportunities provided by learners' linguistic and cultural diversity; to cater for learners with a wide range of needs (e.g., special and specific needs, socio-economic and socio-cultural background, and gender); to co-create with students a non-threatening environment that is driven by learning and the active participation of all students.

8. CLIL Management

Developing quality CLIL is a complex undertaking involving many stakeholders including students, CLIL teachers, non-CLIL teachers and administrators. This calls on stakeholders to build common knowledge about programme management and an understanding of each other's role in supporting its development.

CLIL teachers should be able: to work within change models; to apply the principles of professional learning communities, models and strategies; to work with internal and

external stakeholders; to apply the principles of professional self-management; to represent the interests of CLIL in public relations.

Outcomes of CLIL education

Content outcomes - how teaching the foreign language affects the subject knowledge and skills of the learners. Generally speaking, research results are positive, with most studies making the observation that CLIL learners possess the same amount of content knowledge as their peers who were taught in their native language. The CLIL students work more persistently on tasks, showing higher tolerance of frustration, thus acquiring a higher degree of procedural competence in the subject (Vollmer *et al* 2006).

Language learning outcomes - general statements on the effect of CLIL on students' language learning outcomes are positive. CLIL students can reach significantly higher levels of foreign language learning than by conventional foreign language classes and that positive effects on communicative competence are visible. A comparison of the performance of CLIL students and their non-CLIL peers on a standardised placement test showed that a higher percentage of students from the CLIL group reached the required B2 level (CEFR) level than from the group who had followed only the conventional foreign language curriculum. Different studies have determined that CLIL significantly enhances the language skills of the broad group of students whose foreign language talents or interest are average.

The following table can show language the affected and unaffected competences by applying CLIL training:

Affected language outcomes	**Unaffected language outcomes**
Receptive skills	Syntax
Vocabulary	Writing
Morphology	Informal/non-technical language
Creativity, risk-taking, fluency	Pronunciation

There are many advantages to the CLIL approach: it develops confident learners and enhances academic cognitive processes and communication skills. CLIL encourages intercultural understanding and community values. In addition, research shows that learners become more sensitive to vocabulary and ideas presented in their first language as well as in the target language and they gain more extensive and varied vocabulary. In the target language, learners reach proficiency levels in all four skills of listening, speaking, reading and writing far beyond what is expected in the traditional foreign language programmes.

The CLIL offers teachers/trainers a step ahead in their professional development. As a result of the global need for language learning, particularly for English, teachers of other curriculum subjects as well as trainers who are language teachers can benefit from the opportunities of CLIL in order to increase their existing qualifications. This will demonstrate their understanding of how to teach a broader range of subjects for the 21st century.

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