Universal Learning Programme

collaboration- mastery- character- passion

United Nations Educational, Scientific and Cultural Organization

International Bureau of Education

Ecole Internationale de Genève
International School of Geneva
La Grande Boissière
THE SEVEN COMPETENCES
LES SEPT COMPÉTENCES

Lifelong learning
Apprendre tout au long de la vie

Self-agency
Etre autonome

Interactively using diverse tools and resources
Utiliser de manière interactive
des outils et des ressources diversifiés

Interacting with others
Interagir avec autrui

Interacting with the world
Interagir avec le monde

Multi-literateness
Les littératures multiples

Transdisciplinarity
La transdisciplinarité
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Introduction to the Universal Learning Programme and Universal Understanding Guide

The Universal Learning Programme (ULP) is a Kindergarten to Year 11 (age 3 to 15) school curriculum developed by the International School of Geneva’s La Grande Boissière and UNESCO’s International Bureau of Education (IBE). The ULP educational approach, designed by leading researchers, neuroscientists and curriculum experts, is focused on the development of competences and deep conceptual understanding. It is by nurturing these powerful constituents of human learning that we will not only prepare our learners for strong academic performance, but also for the individual, collective and public good.

The ULP works through projects, assessments and learning adventures that stimulate and nurture character, passion, mastery and collaboration within each learner and throughout the school. Through our Universal Understanding approach, we take thinking to a powerful abstract level, always substantiated with rigorous research and examples.

Social impact
Our long-term goal is to partner with world leaders in education to create an alternative to traditional school-leaving certificates; one that tells the story of a student’s competences rather than merely academic performance. This will be our Universal Learning Passport. These leaders will become part of a consortium that unites industries, think tanks, universities and other schools to ensure that our passport has global currency.

The purpose of this guide
The purpose of this guide is to describe ULP pedagogy, an approach that strives to bring out in each learner the highest possible levels of abstract thinking, allowing for transdisciplinary transfer, deep understanding and lifelong innovation. The guide is first and foremost for ULP teachers but can be appreciated by students, parents and a broader audience passionate about effective learning in the 21st century.

Pedagogy
Key attributes of the ULP that make it a unique educational journey are:
- The character project
- The passion project
- The mastery project
- Assessments using UNESCO’s IBE global competences
- Teaching for universal understanding
The International School of Geneva’s La Grande Boissière and UNESCO’s International Bureau of Education have collaborated on a 21st century curriculum called the Universal Learning Programme (ULP) that develops competences in young people to equip them to thrive in our world and to develop a strong social conscience. These competences, identified by some of the world’s top researchers and practitioners, are:

**Lifelong learning:** knowing how to learn affords people the regenerative capacity to reinvent themselves for changing contextual demands. It is the source of innovation, adaptability, agility, and resilience.

**Self-agency:** this demands capacity and empowerment to analyse the demands of one’s environment and apply all resources at hand (knowledge, skills, technologies, etc.) to take beneficial and self-fulfilling action.

**Interactively using diverse tools and resources:** these tools include intellectual, cultural, religious, linguistic, material, technical, fiscal, physical, and virtual resources, the interface of the self and machines in smart factories as envisaged in the concept Industry 4.0, the use of multiple technologies, and of time.

**Interacting with others:** this demands collaboration to resolve complex problems and create integrated solutions across contexts. It reaches beyond productivity to humanity.

It is also a key competence for social interaction, social cohesion, harmony, justice, and ultimately a peaceful and more reconciled future.

**Interacting with the world:** this enables awareness, sensitivity, and advocacy for collective challenges and opportunities at a local, national, regional, and global level. It entails multicultural, multi-religious and multilingual perspectives that embrace diversity as an enriching asset.

**Multi-literateness:** The 21st century requires people to be multi-literate and to flexibly deploy all literacies. These go beyond reading, writing, and arithmetic to include competences like digital, cultural, financial, health, and media literacies.

**Transdisciplinarity:** Increasing complexity requires ever more sophisticated solutions that integrate knowledge from multiple disciplines and domains of knowledge. (UNESCO, IBE)

The competences that drive learning in our curriculum are grouped into four themes, each driven by a guiding question:

- **Character – Who am I?**
- **Passion – What is my purpose?**
- **Mastery – How can I go further?**
- **Collaboration – How can we work together?**
Imagine you are walking through a ravine. To your left and right you see rocks, bushes, footpaths, and trees. You take in the detail of everything you see about you as you walk on. You notice that the grass is green in some places but brown in others. You take in this information but cannot fathom why it should be.

Now imagine you walk up one side of the ravine, up and up until you reach the top where you sit on a cliff and peer down below to where you were before. You can still make out the rocks, the bushes, the footpaths and trees but you see them differently. What you are looking at now is a bird’s eye view of the bottom of the ravine, the big picture: you notice that a stream cuts through the ravine and on either side of its banks the grass is green. Where the stream runs near the path, the grass there is also green.

You now understand why the grass is green in some places but brown in others. This is what universal understanding is: it is standing back from the detail of what you are learning to see the big picture.

Universal Understanding is the ULP’s approach to the structuring of knowledge and skills, for, in order to see how ideas are connected and how knowledge can be grouped in big ideas, we need to stand back from our learning to take it all in.

When we do this, we are able to see knowledge and skills grouped in concepts. Concepts allow us to organise, make sense of, analyse, and engage with information in a complex world. Concepts act as the building blocks for understanding. “They reduce our need to continually relearn, allowing us
to transfer our knowledge, skills, and experiences in the world to a set of mental categories. Ultimately conceptual understanding supports learning transfer. If a student truly understands the concept of ‘equal’ in addition or division equations, (s)he is far better prepared for the complexities of algebra than a student who has rote-learned their basic facts.

“In a rapidly changing world, our ability to transfer concepts to unfamiliar contexts gives us immense cognitive advantage. Instead of needing to memorise new information, we can relate our mental schema to new examples.” An understanding of concepts and the relationships between them helps us make objects, situations, and ideas meaningful.

In other words, to come back to our initial analogy, standing back from the factual details of learning to take in the whole picture – from a bird’s eye view – helps us understand better because we can view relationships and contexts.

When learners enter new conceptual territory, it paves the way for previously inaccessible ways of thinking about something. Conceptual understanding represents a transformed means of thinking about, interpreting or viewing something, without which the learner cannot progress, and it results in a reformulation of the learner’s frame of meaning. Universal Understanding may involve challenge, oscillation, discomfort and, at times, a sense of being stuck. This is because Universal Understanding offers a space of active exploratory learning, which is not always easy, but when new transferable understanding is achieved, it provides huge motivation and a powerful sense of achievement and mastery.

Teaching for Understanding versus Knowledge

ULP is all about teaching for understanding as opposed to teaching for knowledge’s sake. Teaching for understanding versus knowledge is a tension that exists in so many of the educational curriculums that are in use today. Knowledge is necessary but not sufficient for the educational goals of any century, not just the 21st; this can also be said of skills. One can have knowledge and skills without understanding but not vice versa. And yet so often, when filling out curriculum maps, teachers begin with knowledge and skills, the ‘what’ and the ‘how’ that will be incorporated into the lesson plans. Gathering knowledge alone on topics that are being studied the world over is shackling learners to the time, place and situation in which the knowledge and facts reside. Surely this cannot be the end goal of education. Surely, we as educators are not responsible for keeping students in the world of knowledge but, instead, are facilitating their learning into the realm of ideas, pattern recognition and transferable conceptual relationships.

The process we use for curriculum planning in the ULP is completely different: we start with Universal Understandings. Once we establish and articulate clearly what it is we need our students to understand, then we can set about the task of looking at the knowledge and skills that will be subsumed in each curriculum topic; Wiggins and McTighe call this Understanding by Design.3

Therefore, when turning to assessment, a performance task should be a demonstration of the essential understanding, not a performance of knowledge and skills in isolation. Placing the goal of understanding in the curriculum documentation title is a powerful start to making clear what the goal of the curriculum is.

Not only is understanding necessary but the transferability of that understanding is the goal and that is what gives power to the curriculum. The power of the curriculum rests squarely in the hands of the learner, a learner who can recognise and work with an understanding in a new and novel situation from the context in which it was first encountered.

In a Universal Understanding learning environment, we recognise the value of transdisciplinary learning in preparing students for the complexity of our rapidly changing world. Future generations will be required to come up with ever more sophisticated solutions that integrate knowledge and skills from multiple disciplines. This transdisciplinary learning is united by the exploration of a shared topic or problem where each discipline contributes the knowledge and/or skills required to understand the problem more deeply, generate solutions, and represent ideas. It is important to emphasise

that it is through a shared exploration of a topic or context that transdisciplinary learning is most powerful, rather than a focus on a single concept applied to different topics in each discipline.

Here is an example of Universal Understandings for transdisciplinary exploration from a six-week Language Arts Unit of Media and Bias that is supported by Art and Data Handling in Math.\footnote{Planner developed by Trudy McMillin}

**Universal Understandings**

1. Authors make decisions about the accuracy of the information they share with ethical implications.
2. Writers use quotations, citations, links, acknowledgements, and references to recognise the ideas and work of the original author.
3. Artists modify their style depending on their message and intended audience.
4. Layout and design can change perception, accessibility, and interpretation of information.
5. A text can intentionally or unintentionally present biased information to portray a desired message.
6. Data can be manipulated to misrepresent the facts.
What is a Concept?

The word ‘concept’ comes from the Latin ‘concipere’, meaning ‘to take in’. It is linked to the word ‘conceptum’, meaning ‘a thing conceived’. Therefore, a concept is a way of conceiving information. “Concepts are the mental categories that help us identify, develop and classify objects, events or ideas, building on the understanding that each object, event or idea has a set of common relevant features”.

Concepts are drawn from a topic or a process and support transfer across time, place and situations. For example, if a student studied deforestation in the Amazon rainforest by exploring concepts such as perspective, economic incentive and environmental impact, they would be able to draw on this learning when reading an article about oil companies’ attempts to discredit the science of climate change.

Concepts vary in their complexity and specificity, existing both within subjects and beyond disciplinary bounds. We can distinguish between disciplinary and transdisciplinary concepts.

Transdisciplinary concepts provide breadth within our curriculum and allow us to transfer thinking from one domain to another, for example, the concept of change can be investigated in science, mathematics and history; the concept of reciprocity can be investigated in mathematics and ethics; the concept of power can be investigated in geography and literature.

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5 Ecolint-IBE, 2014, p. 21
6 Erickson, Lanning, & French, 2017, p. 3
Disciplinary concepts provide depth, and support students in developing expertise in a given subject area. Meyer and Land emphasise the importance of subject contexts in the formation of concepts, as concepts make up part of a discipline’s structure. In other words, while conceptual understanding may lead to transdisciplinary understanding, it remains important to first build up solid conceptual understanding within disciplines. In Universal Understanding pedagogy, we look to develop students’ understanding of both disciplinary and transdisciplinary concepts. While transdisciplinary concepts promote breadth and allow for greater transfer, disciplinary concepts promote depth and disciplinary rigour.

The approach of the Threshold Concepts Framework\(^8\) builds on the notion that there are certain concepts, or certain learning experiences that are akin to passing through a portal, from which a new perspective opens up. This allows the learner to enter new conceptual territories where thoughts, facts, objects and concepts that were formerly not within view can now be perceived. It permits a new and previously inaccessible way of thinking about something. It represents a transformed means of understanding, interpreting, or viewing something, without which the learner cannot progress, as it results in a reformulation of the learner’s frame of meaning.

The threshold approach also emphasises the importance of subject contexts, since the conceptual boundaries that are crossed are part of disciplinary structures and formation. As a consequence of comprehending a threshold concept, there may thus be a transformed internal view of subject matter, subject landscape, or even worldview.

Meyer and Land characterise such conceptual gateways as transformative (occasioning a significant shift in the perception of a subject), integrative (exposing the previously hidden interrelatedness of something, particularly in relation to other concepts), and deem them likely to be, in varying degrees, irreversible (unlikely to be forgotten, or unlearned without considerable effort). They are also frequently troublesome for a variety of reasons.\(^9\) These learning thresholds are often the points at which students experience difficulty, and the transformation may be sudden, or it may be protracted over a considerable period of time.

The transition to understanding often involves an encounter with ‘troublesome knowledge’. This is the kind of knowledge which cannot easily be accommodated or assimilated into our existing frame of meaning and will require that we construct a new frame of meaning that can integrate this new perspective. The transformation is troublesome because, in addition to integrating new conceptual material, it entails a letting go of a hitherto familiar view.

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\(^{9}\) Perkins, 2006.
Depending on subject and context, knowledge might be troublesome because it is ritualised, inert, conceptually difficult, alien or tacit, because it requires the adoption of an unfamiliar discourse, or perhaps because the learner remains ‘defensive’ and does not wish to change or to let go of his or her customary way of seeing things.

Thresholds often require an uncomfortable ontological shift. We are what we know. Thus, while insights gained by learners as they cross thresholds can be exhilarating, they might also be unsettling, requiring a change in the students’ subjectivity, (their sense of who they are) and, paradoxically, a sense of loss, through which they will need to be supported.

The notion of a ‘threshold’ has always demarcated “that which belongs within” (the place of familiarity and relative security) from “that which lies beyond” (the unfamiliar, the strange, the potentially threatening). It reminds us that all journeys begin with leaving that familiar space and crossing over into the riskier space beyond the threshold. So, too, with any significant transformation in learning: threshold concepts scholarship is concerned (directly and indirectly) with stepping into the unknown, and into the disconcerting conceptual and ontological shifts that stepping out entails.

Difficulty in understanding threshold concepts may leave the learner in a state of ‘liminality’, a ‘suspended state’ or ‘stuck place’ where understanding may at first approximate a kind of ‘mimicry’.

But the liminal space is not a passive space. Though it may involve challenge, oscillation, and at times a sense of being stuck, it is also a space of active exploratory learning, and, when new understandings are achieved, can provide, as mentioned earlier, huge motivation and a powerful sense of achievement and mastery.
Examples of threshold concepts might include:

Physics

Newton’s Third Law of Motion commonly presents an encounter with troublesome knowledge for students and is frequently a source of misconceptions. A student might, for example, be shown a picture of a dog on a bed and asked this question: “The dog has a weight of 100N. What forces act on him when he lies on the bed?” This might be followed by a second question where the dog is replaced by a stuffed animal toy weighing 5N. “What forces act on the toy?” Then the dog returns to the bed and the student is asked “How does the bed adjust its reaction force so that it always balances the weight of whatever is lying on it?”

This is an example of both a conceptual threshold and troublesome knowledge because it is necessary to understand the third law of motion in order to conceptualise forces correctly and also because it is a highly counter-intuitive, difficult notion to grasp.

Biology

Scale frequently presents a learning threshold in Biology. As one teacher comments: “...the ways in which you may look at something changes your perception of it and understanding of it, and the way in which it’s working, and that can be really important in Ecology”. For example, if students are investigating bird distribution in a given area, the birds may be observed and counted in small areas, such as suburban gardens. But if the bird territories and feeding ranges are much larger than this then the students will not find the observations and patterns they found at the suburban scale. Other biological threshold concepts might include photosynthesis, osmosis, and even hypothesis.

Geography

Geologic time or deep time (including succession and duration). There are at least three possible reasons for student difficulties – the long durations compared to everyday experiences, a lack of understanding of large numbers, and a lack of subject matter knowledge. Deep time is at the very heart of geosciences yet remains poorly understood within society. The non-illuminating response of “millions and millions of years ago” that primary teachers offer inquisitive children, characterises a typical response. A more accurate conceptual response might be John McPhee’s description:

Consider the Earth’s history as the old measure of the English yard, the distance from the King’s nose to the tip of his outstretched hand. One stroke of a nail file on his middle finger erases human history.11

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11 McPhee, 1998, p. 77
Thresholds are not only concepts. It is also important to recognise certain skills and strategies as thresholds. They shift learning to a new gear. Examples include reading, writing, dribbling a ball, being able to surf along a wave and change chords swiftly on an instrument.

All of this has implications for teaching: in a universal understanding environment, teachers must take the time to test for deep understanding and to revisit conceptual understanding repeatedly, always allowing for learners to progress. If we put curriculum coverage over learner understanding, we leave gaps in learners’ profiles and force students to move to increasingly complex conceptual levels without having secured the baseline core conceptual understanding necessary for deep understanding.

To be sure, achieving such a differentiated environment is not easy, especially in environments with large classes and packed schedules. Task design, group work thinking routines and relationships around learning need to be considered carefully.13

Spatial literacy in geography presents a further possible threshold concept. Changing the mode of learning may often help to transform understanding of a concept, for example a field trip where students can observe 3D geological features, and subsequently translate these features onto a 2D map. Immersion in the field environment can be key to the development of spatial literacy. Similarly, hands-on modelling exercises can allow students to construct 3D geological structures to help them understand interaction between geological processes such as faulting, folding, tilting, erosion and deposition.12

The thresholds approach has significant implications for both course design and assessment. It draws attention to what matters most in a curriculum and can serve to streamline curricula that have become overly ‘stuffed’ with factual content. In this respect, threshold concepts can be viewed as the jewels in the curriculum. The approach indicates that learning requires a certain recursiveness (‘coming at the troublesome knowledge through differing modes’).

12 King, 2009.

13To find out more about the type of teaching necessary for universal understanding, see Marope, Griffin and Gallagher’s 2017 publication Transforming Teaching, Learning and Assessment, A Global Paradigm Shift.
The thresholds approach is neither teacher-centred nor student-centred but requires subject teachers to deconstruct their subject. It is now being used as a curriculum design tool, a mode of pedagogical research and an approach for the professional development of new academics. Dr Mick Flanagan’s comprehensive website on thresholds\textsuperscript{14} shows how recent scholarship around the world has challenged and extended the theoretical boundaries of the thresholds concept framework in relation to our understandings of transformation, liminality and students’ experience of difficulty.

\textsuperscript{14}https://www.ee.ucl.ac.uk/~mflanagan/thresholds.html
In Universal Understanding learning we ask students to come up with a number of powerful generalisations over the course of each learning unit. Instead of listing the understandings at the beginning of the unit, Universal Understanding pedagogy assumes an elicitive approach where students explore factual examples or case studies in search of patterns or connections. Elicitive thinking means that understanding is “elucidated and enhanced through reflection and dialogue”. Students then develop universal understandings as a synthesis of their findings.

The elicitive approach honours student thinking and views learners of all ages as capable of articulating their own understanding. “If we want to create thinking classrooms, we must trust that our students are both capable and competent conceptual thinkers”. In order to understand an elicitive approach, it can be helpful to contrast it with a deductive approach to developing understanding. With the deductive approach, teachers tell students what they will understand in a study, and the students then seek factual examples to gather support for the Universal Understanding. Student investigation results in the validation of the teacher’s understanding shared with the class.

In both elicitive and deductive methods, synergistic thinking – the interaction between factual and conceptual levels of thinking – is required to induce deep understanding.

Although teachers create their own universal understandings in both methods, during the planning process of the elicitive approach, we do not share or ‘unpack’ these understandings with students. We allow students to construct and articulate their own universal understandings to promote self-agency and mastery.

Constructing elicitive universal understandings as part of the planning process allows us to:

- Identify transferable learning
- Design factual, conceptual and provocative questions that scaffold learning
- Align learning experiences with disciplinary and interdisciplinary concepts and universal understandings
- Develop assessments focused on the conceptual relationships we want students to understand, creating concept-driven, formative and summative assessments.
Adopting an elicitive approach to forming conceptual understandings relies on powerful and intentional questioning. Teachers use guiding questions to scaffold thinking from the factual to the conceptual level. Guiding questions draw student attention to specific factual content and skills in order to make connections. Working backward from our universal understandings, we create three types of guiding questions for a unit: factual, conceptual, and provocative/debatable. We can add a fourth type of question: universal. This type of question should come at the end of the year and give learners a chance to work from a generalisation to specifics (the deductive process).

**Factual questions** focus students on the critical knowledge within the unit, highlighting specific factual examples or case studies that support students in forming universal generalisations later in the unit. Factual questions are locked in time, place, or situation and do not transfer to other situations and contexts.

**Examples:**
- What is imagery?
- What happened when the Egyptian government cut access to internet and cellular communication during the 2011 Revolution?
- What are mitochondria?

**Conceptual questions** transfer and are designed to help students make connections to other contexts. They challenge students to delve deeper and require more sophisticated levels of cognitive processing and thinking. Conceptual questions guide teaching and learning toward developing Universal Understandings.

**Examples:**
- Why do migrants sometimes face social and emotional isolation?
- How do people choose the most appropriate unit of measure?
- How does the poet use imagery to evoke an emotional reaction from the reader?
- How does Usain Bolt’s posture and technique contribute to his speed in a 100m sprint?
- How does a species’ form and function relate to environmental conditions?

**Provocative or debatable questions** promote critical thinking, perspective development and creative thinking. They have no right answer, they may be factual or conceptual.

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22 Erickson, L., & Lanning, L., & French, R., 2017, p.55

23 Erickson, L., & Lanning, L., & French, R., 2017, p.55
Students are encouraged to take a stance and justify their ideas using evidence. Provocative questions support students in applying their understanding in novel contexts.24

Examples:
- Can human innovation keep up with the pace of environmental change? Why/Why not?
- What would the world be like without immigration control?
- Does a minimum wage improve conditions within a society? Why/Why not?

To bring all this together, we then revisit a generalisation. For example:

_Oppression and poverty can motivate people to revolt; they fight to gain greater freedom or economic opportunities._

However, instead of telling students this, we will immerse them in rich case studies of revolution and use guiding questions to challenge and focus their thinking, supporting them in coming to this generalisation, or their own, themselves.

**Universal questions** are questions that operate at the highest level of Universal Understanding. Although the elicitive approach is preferred in Universal Understanding pedagogy because it drives self-agency and creative thinking, the ULP also uses deductive thinking to drive analytical thinking and the application of generalisations to case studies, facts, skills, processes and strategies.

Universal questions can be applied to any conceivable context and stimulate broad, connective thinking. They should be investigated by all students according to their age and needs, and the context of learning. The essential purpose of answering a universal question informally is to stimulate higher-order thinking, reflection and pertinent discussion. When answering the questions, learners should always go further than one word answers, justifying and substantiating their answers with clear examples.

**Examples:**
- What counts as innovation?
- What never changes?
- What is progress?
- How does learning advance society?
- How do symbols help us understand things?
- Can there be a world without conflict?

To explore universal questions, you need guiding questions that help learners to expand their thinking and worldview. For example, below are some guiding questions that can be asked to trigger thought and debate about the universal question: Can there be a world without conflict?

- What caused the Arab Spring in 2010–2011? (Factual)
- What caused the French Revolution? (Factual)
- What do political revolutionaries often seek to gain? (Conceptual)
- What motivates people to revolt? (Universal)
- Does poverty and oppression always lead to revolution? (Provocative)

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In order to represent how Universal Understandings are formed, the International School of Geneva has developed two Universal Understanding Pyramids. These models are modified from “The Structure of Knowledge” by Erickson and “The Structure of Process” by Lanning. Understanding each level of the Universal Understanding Pyramid and the relationships between levels is essential to building a rigorous conceptual curriculum. The open spaces between the sections of the pyramids suggest that learners can move up and down levels and enter at different levels.

Modified from Erickson’s Structure of Knowledge

Modified from Lanning’s Structure of Process
The models show how knowledge and skills at the base provide a foundation for conceptual thinking and ultimately universal understanding. These facts and skills are framed by a topic or, in the case of skills-based disciplines, a unit of learning context, meaning the skills-enhancing conditions in which a unit will be taught (for example, teaching dribbling in the context of a basketball unit). It is from this critical content and skills context that we can extract significant concepts and connect them to form transferable Universal Understandings.

It is essential that we recognize the importance of facts and skills in forming concepts and conceptual understandings. It is through exposure to different examples that we are able to form concepts, identify patterns and make connections. Concepts are derived from the topics being explored; they are the ideas that are central to the subject. They gain power when expressed in a relationship to other ideas in the unit of learning and even more power when that relationship extends beyond the unit. This is transfer and the goal of our curriculum. Facts and skills are integral to the curriculum, and are necessary, but they are not the end goal; the end goal is at a much deeper level. Our lesson planning therefore cannot stop at learning facts and skills alone; they are a critical part of the journey, but certainly not the destination.

The Universal Understanding Pyramid: Knowledge

If you ask a student to shade ½ a circle and colour in ¼ of a set of apples and they complete the tasks successfully, it might be easy to assume that they understand fractions. Ask the same student to order fractions from biggest to smallest and you get this response: “1/8, 1/4, ¼”. What does this mean? Has the student really understood the relationship between the numerator and the denominator or part-whole relationships or have they simply rote-learnt how to complete math problems, correctly or incorrectly, without a deeper understanding? The Universal Understanding Pyramid illustrates the relationship between the lower level factual thinking and higher level of conceptual thinking.

To explain this further, we provide definitions and examples of each of the components of the Universal Understanding Pyramid: Knowledge.

1. **Facts** provide specific examples, they are locked in time, place, or situation and do not transfer. Factual content provides the foundation for Universal Understandings.

**Examples include:**
- Napoleon was defeated at the battle of Waterloo in 1815.
- In our solar system, Earth is the third planet from the Sun.
- Sine, cosine, and tangent are each a ratio of sides of a right-angled triangle.

These are examples of facts because they consist of simple declarations of well-established information. As each is a single statement, none is grouped in any larger set as would be the case with a topic or learning context.

2. **The Topic or Learning Context** provides a frame for the unit. Topics are factual, locked in time, place, or situation and do not transfer. Topics or context should name how facts or skills within the unit are connected, for example, by time, place, and/or situation.

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23 Erickson, Lanning & French, 2017, p. 30
29 Erickson, Lanning, & French, 2017, p. 33.
30 Erickson, Lanning, & French, 2017, p. 33.
Examples:
• Oppression and poverty can motivate people to revolt to gain greater freedom or economic opportunities.*
• The type of shape and area remain the same when transformed through reflection, translation, or rotation.
• A fuel releases energy when it undergoes a chemical reaction.

* Note the use of the qualifier “can”, as we are not saying that all oppressed people revolt; it is certainly a significant idea, but it is not true in all situations.

3. Concepts are mental constructs drawn from a topic that transfer to new situations and contexts. They are one or two words (nouns) or a short phrase or abstract, and they are timeless. Concepts transfer across situations and contexts, and examples share common attributes.31 Note that some concepts are thresholds, meaning that they are transformative, integrative, irreversible and can be troublesome.

Examples:
• Conflict
• Relationships
• Proportionality

Conflicts, relationships and proportionality are all abstract notions that can be applied to numerous cases and examples: we can apply conflict to nation states, families, animal interactions and so on. Proportionality is a mathematical concept, but it can be extended to various realms of meaning such as decision-making, economics and physical objects. Concepts stretch across disciplines and units, linking them with a common overriding principle.

4. Universal Understandings are transferable ideas that apply across contexts and situations. Universal Understandings state the relationship between two or more concepts. They are also known in educational literature as conceptual understandings, generalisations, essential understandings or big ideas. They are often stated as truths, and sometimes require qualifiers such as ‘often’, ‘can’, or ‘may’ if they are conveying a significant idea that is not true in all situations.32

Examples:
• Oppression and poverty can motivate people to revolt to gain greater freedom or economic opportunities.*
• The type of shape and area remain the same when transformed through reflection, translation, or rotation.
• A fuel releases energy when it undergoes a chemical reaction.

* Note the use of the qualifier “can”, as we are not saying that all oppressed people revolt; it is certainly a significant idea, but it is not true in all situations.

31 Erickson, Lanning, & French, 2017, p.33.
32 Erickson, Lanning, & French, 2017, p.33
In the tables that follow we demonstrate the relationship between the different components of the Universal Understanding Pyramid: Knowledge.

We use war, conflict and World War I as the example of a learning unit to show how teaching can take learners from facts to universal understandings and how, on the other hand, universal understandings, can be substantiated by topics and facts.

### LEVEL 4

**Universal Understanding**

**Conflict** can shift the **balance of power** or **distribution of resources** within a **relationship**.

Resolving **conflict** can shift **perspectives** and promote greater **equality** and sharing of power and resources.

### LEVEL 3

**Concepts: Disciplinary and Transdisciplinary**

**War, Conflict, Change, Power**

### LEVEL 2

**Topic or Context**

**World War I (1914–1918)**

### LEVEL 1

**Facts**

| Dates and the significance of different battles. | The assassination of Archduke Franz Ferdinand of Austria. | The peace armistice was signed on November 11, 1918. | The Treaty of Versailles required that Germany accept full responsibility for causing World War I. |
Here we use graphs, data and statistics as the example of a learning unit to show how teaching can take learners from facts to universal understandings and how, on the other hand, universal understandings can be substantiated with topics and facts.

<table>
<thead>
<tr>
<th>LEVEL 4</th>
<th>Universal Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Straight lines</strong> can model relationships between two quantitative variables.</td>
<td></td>
</tr>
<tr>
<td><strong>People</strong> can manipulate data to present a biased perspective.</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>LEVEL 3</th>
<th>Concepts: Disciplinary and Transdisciplinary</th>
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</thead>
<tbody>
<tr>
<td>Relationship, Bias, Perspective, Line, Variable</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>LEVEL 2</th>
<th>Topic or Context</th>
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<tbody>
<tr>
<td>Data Handling/ Statistics</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>LEVEL 1</th>
<th>Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>This graph shows that a linear relationship exists between the given variables.</td>
<td>In this graph the slope of 1.5 cm/hr means that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</td>
</tr>
</tbody>
</table>

![Graph showing linear relationship between hours and cm]({{image_url}})

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33 From Common Core Grade 8.
Here we use trade regulation and government intervention in trade as the example of a learning unit to show how teaching can take learners from facts to universal understandings and how, on the other hand, universal understandings can be substantiated with topics and facts.

**LEVEL 4**

**Universal Understanding**

* Governments and political unions may try to reduce market inequities through regulation, taxation, and subsidies.
* Government intervention in markets may create inefficiency resulting in the poor allocation of scarce resources.

When the demand equals supply the market reaches a price equilibrium.34

**LEVEL 3**

**Concepts: Disciplinary and Transdisciplinary**

Supply, Demand, Control, Price, Equilibrium, Government Intervention

**LEVEL 2**

**Topic or Context**

Government Intervention in European Markets

**LEVEL 1**

**Facts**

| The EU sets rules on wholesale energy trading to foster competition. | Switzerland pursues an active free trade policy. | Rent controls are pervasive in Europe since World War I. | Many European countries enforce a minimum wage. |

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34Equilibrium is an example of a threshold concept.
Remembering their own first day, a young child can infer and articulate that all children feel scared and excited before starting a new school. Does the same child understand that they can use this strategy of connecting to their own prior knowledge and experiences to make other inferences? It is easy to assume when a child can demonstrate a skill that they will be able to repeat it in another context. Unfortunately, it is not so simple, as a child’s understanding of when and how to apply skills transfer is often limited.

It is important to develop skills transfer by drawing concepts and forming understandings from skills, processes and strategies. Here we unpack each of the components of the Universal Understanding Pyramid: Skills, Processes and Strategies, drawing on the work of Dr. Lois Lanning.

1. **Skills** are the smaller operations or actions, that, when applied appropriately, allow strategies to work.

   **Examples:**
   - Sounding out
   - Chunking
   - Shading

   Note that these are all examples of techniques: they must be learnt and can then be applied to reading (sounding out and chunking) or drawing (shading). The techniques are skills because they are specific and small scale in nature.

2. **Processes** define what is to be done. They are actions that produce a result. "A process is continuous and moves through stages during which inputs (materials, information, people’s advice, time, etc.) may transform or change the way a process flows.”

   **Examples:**
   - The comprehension process
   - The process of composing music
   - The design process

   Note that here we see how skills are strung together in a larger operation. Each of these examples of an operation implies many skills (for example, comprehension involves close reading, analysis, interpretation; composing music involves sense of memory, harmony and rhythm, and the design process involves skilful actions such as moulding, visualising and so on). What makes these examples processes is that they state entire collections of skills.

3. **Strategies** are the systematic plans that learners intentionally adapt and monitor in order to improve their performance. Strategies are made up of a number of skills. In order to use a strategy, students must be able to effectively combine a range of skills.

   **Examples:**
   - Leadership
   - Social networking
   - Examination preparation
We note how these examples go beyond skills and strategies to describe how skills and strategies are deployed in various contexts. A great leader is not just a skilled communicator who can engage in the process of consultation, she or he must know how to take vital decisions, read other people and deduce outcomes. These are subtle, strategic qualities.

To further understand this, we now elaborate on Process-Based Concepts and how these related to Universal Understandings in the Universal Understanding Pyramid.

**Process-Based Concepts**

**Examples:**
- Voice
- Character trait
- Melody
- Tone

These concepts are process-based in that they are related to technique. We can conceptualise voice, character trait and melody as purely intellectual ideas but note that they are also necessary techniques in the creative process: voice and character traits, if drawn out well, contribute to character development; melody is a concept but also a method for creating music.

**Process-Based Universal Understandings**

**Examples:**
- Readers ask questions and make connections to prior knowledge in order to understand the text.
- Writers use factual examples to support their ideas and make their arguments more persuasive.
- Collaborating with other artists can give a musician new ideas and inspiration for their compositions.

Note how these universal understandings connect process-related concepts.

In the tables that follow we demonstrate the relationship between the different components of the Universal Understanding Pyramid: Skills, Processes and Strategies. It illustrates the relationship between skills, processes, concepts, strategy and universal understandings. As is the case with all Universal Understandings, when the Universal Understandings for skills, processes and strategies are reached, they connect at least two process-related concepts in a powerful generalisation that can be applied across different contexts. Importantly, learners are brought to reflect on strategies they can use themselves in order to put skills, processes and concepts into effective action in various contexts.
LEVEL 5
Universal Understanding

Writers and speakers can **persuade** others to take action by combining factual **evidence** with emotive **arguments**.

Readers make **connections** with other texts they have read in order to deepen their **understanding**.

LEVEL 4
Strategy

In order to persuade an audience, both emotive and factual arguments have to be made compellingly.

LEVEL 3
Concepts: Disciplinary and Transdisciplinary

**Inference, Evidence, Argument**

LEVEL 2
Topic or Context

**People Who Changed the World**

LEVEL 1
Skills

- Provide logically ordered reasons that are supported by facts and details.
- Link opinion and reasons using words, phrases, and clauses (e.g., consequently, specifically).
- Produce clear and coherent writing in which the development and organisation are appropriate to task, purpose, and audience.
- Explain relationships or interactions between two or more individuals, events, ideas, or concepts in a historical text, based on specific information.39

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39 From Common Core Grade 5.
### LEVEL 5

**Universal Understanding**

In order to select the correct tense framework, speakers consider how actions take place and the sequence in which events occur.

Use of the imperfect tense suggests that the past action was without a definite beginning or a definite end.

### LEVEL 4

**Strategy**

A strategy for determining the correct tense in a phrase is to identify the nature of the action it describes.

### LEVEL 3

**Concepts: Disciplinary and Transdisciplinary**

Tense, Event, Past, Sequence, Action, Structure

### LEVEL 2

**Topic or Context**

World Languages: Spanish Intermediate  
Learning Context: In the Words of an Eye Witness

### LEVEL 1

**Facts or Skills**

- Imperfect tense implies that the past action did not have a definite beginning or a definite end.
- There are only three irregular verbs in the imperfect: ser, ir, ver.
- To conjugate regular -ar verbs in the preterite, simply drop the ending (-ar) and add one of the following: é, aste, ó, amos, asteis, aron.
- To conjugate regular -ar verbs in the imperfect, simply drop the ending (-ar) and add one of the following: aba, abas aba, abamos, abais, aban.
In any learning unit we should aim for a number of Universal Understandings. Some understandings will be focused on knowledge and others on the development of skills and strategies. We provide multiple opportunities for students to generalise in a unit, forming Universal Understandings with opportunities to establish patterns and connections within and beyond disciplinary bounds.

Teacher-created Universal Understandings are necessary for planning units that ensure the critical big ideas are grasped by the end of the unit. However, the Universal Understandings, whilst clear in the head of the teacher as a knowledge destination for students, should not be articulated for the students, this should be left for them to discover. Indeed, any Universal Understanding generated by students is meaningful because it is the result of student engagement and exploration within the discipline (what we have termed “elicitive learning”).

Crafting Universal Understandings is intense and crucial to ensuring the unit is focused on the big ideas we want our students to “get” before they leave our classes.

To really understand a concept our educational experiences should visit the same concepts from the early years to the final years of the ULP. The concepts should be explored through different examples that are vertically aligned, e.g. the concept of civilisation. What would be different would be the angle from which we approach the concept. In the senior years, one year might be looking at civilisation through the lens of conflict and legacy whereas in lower years one might look at it through power and leadership, and in the primary school years, civilisation could be studied through the lens of communication and language.

Concept analysis should be developmentally appropriate and authentic for the age group. This is something teachers would build on, all the while ensuring vertical articulation. There are many universal and subject-specific concepts that can be explored that would ensure disciplinary depth as well as transdisciplinary transfer.
The Universal Understanding
Final Assessment

Every year, the school community will select four universal questions that will be available to learners for them to answer in an age-appropriate, learning ecosystem-relevant fashion. Answering the universal questions can take place in a group discussion, after a unit of work, through a project or designed pedagogic task. These questions should be wide enough in scope to activate answers from a broad repertoire of different domain areas to allow for comparison, contrast, connections and transdisciplinary thinking.

At the end of the final year of the ULP, learners select one of the four universal questions that the community has chosen and answer it in a formal setting. The answer must draw on at least two topics/subjects/domains and make abundant use of concrete, factual examples. Learners may answer the universal question through a chosen medium. This medium may include but is not limited to:

- an oral presentation
- an analytical essay
- an artwork*
- a website or blog
- a mindmap
- a written manifesto
- a skit
- a song*
- a piece of fiction*
- a poem*
- a scientific experiment
- a piece of fieldwork
- a mathematical equation*

*choices in these media must clearly communicate the answer to the question through an accompanying rationale of 500 to 1000 words.

Any response may be individual or collective. Group presentations or responses will receive one mark that applies to each member of the group.

All live performances must be four minutes per person.

Good practice involves giving learners eight hours preparation time in order for them to work through their answers deeply. Learners should be given open access to any required material or technology as they prepare and answer the question they have selected. Learners should be allowed to present their responses to an audience and the responses will be marked by a panel of staff.
Assessment criteria

The Universal Understanding Final Assessment is not graded but given a ULP credit for transdisciplinarity. ULP credits contribute to the Universal Learning Passport, the ULP’s assessment matrix involving credits attributed to work indicative of the seven macrocompetences.

In order to receive a credit the work is measured against the following standards. It must:

1. Answer the universal question.
2. Go beyond a ‘yes’ or ‘no’ answer, explaining the ‘how’ and ‘why’.
3. Draw on at least two distinct areas of knowledge (subject areas) to substantiate the response.
4. Illustrate claims with concrete examples.
5. Show evidence of independent thinking.
7. Communicate the answer clearly.
Conclusion

ULP PEDAGOGY, using Universal Understanding, is a pathway to a dynamic, future-proof and lifeworthy education that will empower learners in their conceptualisation of the world around them. Through this approach, we will strengthen our learners’ transdisciplinarity and multiliteracy, giving them the tools to apply understanding to diverse, unknown and ambiguous contexts. They will use this to their great advantage throughout their lives.

UNESCO-IBE and The International School of Geneva’s La Grande Boissière wish to see schools across the globe join our mission. To find out more about the ULP and how you can be part of the revolution, contact Conrad Hughes (Campus and Secondary Principal of La Grande Boissière) at conrad.hughes@ecolint.ch
References


Erickson, L. (2013). Concept-Based Curriculum and Instruction: Engaging the child’s mind. [Presentation at the ninth Annual Education Conference at the International School of Geneva, 2014.]


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Project Management and Overall Conceptualisation: Conrad Hughes

Editor: Heather Dugmore

Designer: Juliana Jangara

Proofreader: Jill Wolvaardt