InclуSMe
Intercultural learning in Science and Mathematics initial teacher education

# Module 1

# INTRODUCTION TO CULTURE AND DIVERSITY FOR PROSPECTIVE MATHEMATICS AND SCIENCE TEACHERS

## Worksheets

Co-funded by the Erasmus+ Programme of the European Union

This *worksheet* is based on the work within the project *Intercultural learning in mathematics and science initial teacher education* (IncluSMe). Coordination: Prof. Dr. Katja Maaß, International Centre for STEM Education (ICSE) at the University of Education Freiburg, Germany. Partners: University of Nicosia, Cyprus; University of Hradec Králové, Czech Republic; University of Jaen, Spain; National and Kapodistrian University of Athens, Greece; Vilnius University, Lithuania; University of Malta, Malta; Utrecht University, Netherlands; Norwegian University of Science and Technology, Norway; Jönköping University, Sweden; Constantine the Philosopher University, Slovakia.

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## I. Introduction into the topic “Intercultural learning in Science and Mathematics teacher Education”

### Activity 1.1: Why do we need intercultural competence

**Work in groups and homework** | **30 mins**

**Watch the two films as an introduction. Discuss in groups (based on your experiences) and write down your major results. Afterwards the groups will present their results followed by a plenary discussion.**

- What is culture?
- Why do we need intercultural competence?
- What should a person who has intercultural competence in a general sense feel and know? How should this person act?

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## II. Theoretical Background

### Activity 2.1: Culture and Cultural Identity

| | |
|---|---|
| Work in groups and homework | 20 mins |

### Watch the film. Then work in Groups.

- Write down your own definition of culture and cultural identity.
- How is cultural identity formed?
- What are important aspects of your cultural identity?

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## II. Theoretical Background

### Activity 2.2: Culture and Cultural Identity

Work in groups and homework | 20 mins

**Work in Groups: Read the two definitions below and summarize important aspects of culture and cultural identity. Compare the summary with your own definition. What are the differences?**
**Afterwards we will briefly discuss your definitions.**

There are many different definitions about culture.

**Definition 1**

Culture can be defined as a system of beliefs, customs, and behaviours shared by a social group (Gudykunst 1998; Ramsey 1996). It is a set of facts, rules, emotions, symbols or artefacts, conscious or unconscious, that can dominate practices, norms of social relation and ethnographic variables (nationality, ethnicity, language or religion). It influences the individual's identity, world views, values and expectations, social roles and human relations. It clearly binds people together as well as separating them from one another.

*Gifford, C., Gocsal, A., Rado, B., Gonçalves, S., & Wolodzko, E. (2007). Intercultural learning for European citizenship, p. 9.*

**Definition 2**

The borders between cultures are not equivalent to language boundaries, to borders between nations or to borders between people or ethnic groups.

A complex society exists of partial cultures, which can also be understood as Lebenswelten (i.e. "life worlds" [e.g. Schütz 1959]). Such "life worlds" contain a pool of interpretation patterns, which make up the common everyday knowledge. Persons living in it use this pool in order to orient themselves in the world, structure their perception and reflect on and initiate their activities.

Culture is thus not naturally given or static but dynamic and altered by human beings. Ethnic, migrant or national groups might share similar cultural ways of being, but their cultures change over time and influence each other.

Ethnicity, race and nationality are relational concepts that depend on self-identification and social ascription. While group affiliations and collective identities influence group members' perspectives and actions, individual group members can and do take a critical stance towards their own cultural background and do not necessarily abide by their group's cultural way of life.

Also, others might see individuals as belonging to a particular cultural group while they themselves do not or no longer identify with that group's culture. Identities are multi-layered and complex, and cultural identity is always hybrid (Hall, 1996).

*Educating teachers for diversity: Meeting the challenge. (2010). Educational research and innovation. Paris: OECD, pp. 43 f.*

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## II. Theoretical Background

### Activity 2.3: Diversity

Work in pairs

20 mins

### Work in pairs. Read explanations on diversity below and discuss the following question (10 min). Afterwards we will discuss results (10 min).

- Which aspects of diversity are particularly important for science and mathematics education and why?

**Important principles**

- **Variety exists**, recognition of plurality of life plans
- **Equity: All humans have equal rights** (as variety without equity means hierarchy and equity without variety means excluding adjustment
- **Liberty** (to live a life according to one‘s own lifeplan)
- Accepting **human rights**
- **Appreciation** (as a prerequisite of education processes and socialisation)
- **There are different dimensions of diversity** (gender, social status, age, nationality, religion, etc.)
- **Tertium Comparationis:** Comparisons between groups need to be made in relation to certain characteristics. „Boys and girls are equal" – in relation to what?
- **Different diversity dimensions can overlap.**
- **Synchrone variety:** Humans can vary according to parallel phenomenons
- **Diachrone differences:** Characteristics and differences change over the course of time)
- **Indeterminableness:** There are differences between phenomena in real life and theoretical concepts. A theoretical concept can never descripe a group to the full extend.
- **Different levels of recognition of variety** (makro, meso and mikro level)

*Prengel, A. (2007). Diversity Education – Grundlagen und Probleme der Pädagogik der Vielfalt. In G. Krell, B. Riedmüller, B. Sieben, & D. Vinz (Hrsg.), Diversity Studies: Grundlagen und disziplinäre Ansätze. (49-68). Frankfurt: Campus.*

**Diversity – problems**

- Variety is so large that you cannot do it justice
  - limitations need to be made clear (such as curriculum, structures, as transparency allows for liberty)
  - some structures give more liberty than others.
- Partial acceptance of hierarchy:
  - Societal functions of school: Qualitfication, Socialisation, selection and legitimation
  - E.g. Selection needs to be accepted to provide for equalities of opportunities.

*Prengel, A. (2007). Diversity Education – Grundlagen und Probleme der Pädagogik der Vielfalt. In G. Krell, B. Riedmüller, B. Sieben, & D. Vinz (Hrsg.), Diversity Studies: Grundlagen und disziplinäre Ansätze. (49-68). Frankfurt: Campus.*

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**Definition**

… "diversity" is a multi-faceted concept that can contain as many elements and levels of distinction as required. Work on the topic includes but is not limited to: age, ethnicity, class, gender, physical abilities/qualities, race, sexual orientation, religious status, educational background, geographical location, income, marital status, parental status and work experiences.

… the definition of "diversity" for this work can be framed as: characteristics that can affect the specific ways in which developmental potential and learning are realised, including cultural, linguistic, ethnic, religious and socio-economic differences.

*Educating teachers for diversity: Meeting the challenge. (2010). Educational research and innovation. Paris: OECD, p. 21*

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## III. Connecting intercultural learning to science and mathematics education

### Activity 3.1: Science and mathematics in different cultures

**Work in pairs** | **(15 +10) min**

### Discuss in groups (15 mins) and write down the results of your discussion (10 mins).

- To what extend does scientific knowledge depend on the the cultural context?
- To what extend can indigenous peoples knowledge e.g. in Canada, Australia or the US contribute to science?
- What are the contributions of Arabs to the development of mathematics and science?

**Source: https://www.flickr.com/people/28364885@N02**

Image: “source”, author, year (or cite as you consider copyrights are shown and authoring )

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## III. Connecting intercultural learning to science and mathematics education

### Activity 3.2: Homework: Science and mathematics in different cultures

Homework

90 mins+15 min presentation of homework

### Homework: Read the following texts and search for further information

- Medin, Douglas,  Lee, Carol D. & Bang, Megan (2014): Point of View Affects How Science Is Done  https://www.scientificamerican.com/article/point-of-view-affects-how-science-is-done/
- Beg, Muhammad Abdul Jabbar: The Origins of Islamic Science. http://www.muslimheritage.com/article/origins-islamic-science (focus on the chapters 2.4 and 3.2)
- Snively, Gloria & Corsiglia, John (2001). Discovering Indigenous Science: Implications for Science Education. Science Education, 85 (1), pp.6-34. (see below, Reading for activity 3.1 “Indigenous science”)
- Search for „History of mathematics“ and „History of science“ in the internet.

### Work in groups. Develop a slide presentations which provides answers to the following questions:

**Task 1**

- To what extend does scientific knowledge depend on the the cultural context?
- To what extend can indigenous peoples knowledge e.g. in Canada, Australia or the US contribute to science?
- What are the contributions of Arabs to the development of mathematics and science?

**Task 2**

- Read the texts “responses to diversity” and combine this knowledge with your knowledge on science in different cultures. (see below)
- What implications arise for a science and mathematics education?

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## III. Connecting intercultural learning to science and mathematics education

### Activity 3.2: Homework: Science and Mathematics in different cultures

Reading for Activity 3.2 – Task 1

## Indigenous Science (Ethno-science)

*Excerpts from Snively, Gloria & Corsiglia, John (2001). Discovering Indigenous Science: Implications for Science Education. Science Education, 85 (1), pp.6-34.*

**What is indigenous science?**

Indigenous science relates to both science knowledge of long-resident, usually oral culture peoples, as well as the science knowledge of all peoples who as participants in culture are affected by the worldview and relativist interests of their home communities. […] Disputes regarding the universality of the standard scientific account are of critical importance for science educators because the definition of science is a de facto "gatekeeping" device for determining what can be included in a school science curriculum and what cannot. When Western modern science (WMS) is defined as universal it does displace revelation-based knowledge (i.e., creation science); however, it also displaces pragmatic local indigenous knowledge that does not conform with formal aspects of the "standard account."[…] However, because WMS has been implicated in many of the world's ecological disasters, and because the traditional wisdom component of TEK is particularly rich in time-tested approaches that foster sustainability and environmental integrity, it is possible that the universalist "gatekeeper" can be seen as increasingly problematic and even counter productive. [p.1]

Indigenous science, sometimes referred to as ethno science, has been described as "the study of systems of knowledge developed by a given culture to classify the objects, activities, and events of its given universe" (Hardesty, 1977). [p.10]

The science of long-resident peoples differs considerably from group to group depending on locale and is knowledge built up through generations of living in close contact with the land. [p.11] […]

A fundamental principle taught by indigenous elders is that subject matter is properly examined and interpreted contextually. For example, identification and structural examination of a particular plant and its fruits may be no less important than its uses within the context of a particular family or community and may include stories relating to its use as a food source, its ceremonial uses, its complex preparation process, the traditional accounts of its use (as in purification rituals), its kin affiliations, and so on (Christie, 1991). The context is in marked contrast with WMS where "environmental" and "social" influences are generally considered confounding, and scientists often confine their attentions to the [p.11] controlled conditions of laboratories or the theoretician's office. Traditional ecological knowledge tends to be holistic, viewing the world as an interconnected whole. Humans are not regarded as more important than nature, thus, "traditional science is moral, as opposed to supposedly value free" (Berkes, 1993). [p.12]

**Contributions of indigenous science**

Numerous traditional peoples' scientific and technological contributions have been incorporated in modern applied sciences such as medicine, architecture, engineering, pharmacology, agronomy, animal husbandry, fish and wildlife management, nautical design, plant breeding, and military and political science (Weatherford, 1988, 1991). In the Americas, traditional scientists developed food plants that feed some three-fifths of humanity. They also developed thousands of varieties of potatoes, grain, oilseed, squashes, and hot peppers, as well as corn, pumpkins, sunflowers, and beans. They first discovered the use of rubber, vulcanizing, and also platinum metallurgy (Weatherford, 1988, 1991). Meso-American mathematicians and astronomers used base 20 numeracy to calculate calendars more accurate than those used by Europeans at the time of contact, even after the Gregorian correction (Kidwell, 1991; Leon-Portilla, 1980). Native Americans developed highly articulated and effective approaches to grassland management (Turner, 1991) and salmon [p.13] production (Pinkerton, 1989). Traditional Native American healers discovered and used quinine, Aspirin, and ipecac (a drug still used in traumatic medicine to expel stomach contents), as well as some 500 other important drugs (Weatherford, 1988, 1991). [p.14]

- Among the Nisga'a of Northern British Columbia stories function as deeds to land and resources (McKay, oral communication, 1979). Narratives provide information about changes in migration routes of caribou as a result of new land use activities; changes in the population of salmon or crabs; and changes in the size, vitality, longevity, and even the viscera of animal populations. Oral narratives often provide biologists with important long-term observations describing changes in plant and animal populations that can be correlated with over-fishing and pollution (Cruikshank, 1981,1991; Kuhnlein & Turner, 1991). [p.13]
- In her observations of Athapaskan and Tlingit languages in the Yukon and Northwest Territories, Julie Cruikshank (1991) notes: Observations are made over a lifetime. Hunting peoples carefully study animal and plant life cycles, topography, seasonal changes and mineral resources. Elders speaking about landscape, climate and ecological changes are usually basing their observations on a lifetime of experience. In contrast, because much scientific research in the north is university based, it is organized around short summer field seasons. The long-term observations included in oral accounts provide important perspectives on the questions scientists are studying. (p. 28) [p.13]
- Pioneering work by ecologists such as Conklin (1957) and others documented that traditional peoples such as Philippine horticulturists often possessed exceptionally detailed knowledge of local plants and animals and their natural history, recognizing in one case [p.16] 1,600 plant species. [p.17]
- For example, ecologist Pruitt has been using Inuit terminology for types of snow for decades, "not in any attempt to be erudite, but to aid in the precision in our speech and thoughts" because when dealing with ice phenomena and types of snow "there are no precise English words" (Pruitt, 1978). [p.17]
- The Yupiaq, or Eskimo people of southwest Alaska, have an extensive technology for surviving the harsh conditions of the tundra. While it is true that much of Yupiaq knowledge has been manifested most clearly in their technology, that technology, according to Kawagley and Norris-Tull (1995), did not spring out of a void. "Their inventions could not have been developed without extensive scientific study of the flow of currents in the rivers, the ebb and flow of the tides in the bays, and the feeding, sleeping, and migratory habits of fish, mammals, and birds" (Kawagley & Norris-Tull, 1995, p. 2): Yupiaq people have an extensive knowledge of navigation on open seas, rivers, and over snow-covered tundra. They have their own terminology for constellations and have an understanding of seasonal positioning of the constellations. They have developed a large body of knowledge about climatic and seasonal changes—knowledge about temperature changes, the behavior of ice and snow, the meanings of different cloud formations, the significance of changes in the wind direction and speed, and knowledge of air pressure. This knowledge has been crucial to survival and was essential for the development of the technological devices used in the past (and many still used today) for hunting and fishing. (p. 2) [p.17]
- [Indigenous Science] Provides time-tested in-depth knowledge of the local area which results in more accurate environmental assessment and impact statements. People who depend on local resources for their livelihood are often able to access the true costs and

benefits of development better than any evaluator from the outside. Involvement of the local peoples improves the chance of successful development (Johannes, 1993; Warren et al., 1993, 1997). [p.18]

- Most Aboriginal groups understood plant succession and employed fire to encourage the growth of valuable plants, foster optimum habitat conditions, and control insect pests (Ford, 1979). In British Columbia, controlled burning was practiced on southern Vancouver Island to optimize the production of edible blue camas, which grows best in an open Gary Oak meadow habitat. When controlled understory burning was practiced, the bulbs grew to the size of table potatoes. The Aboriginal management practice was outlawed by newcomer Europeans who misunderstood the practice and had very different culinary preferences and land use agendas. A century later the bulbs are the size of a small green onion and are no longer gathered (Turner, 1991). According to Turner, "the concept of genetic and ecotypic variability was obviously recognized by indigenous peoples and was a factor in food gathering" (p. 18).[p.18]
- In 1982, a Nisga'a fisherman observed mature edible, or Dungeness crabs, marching past the dock at the mouth of the Nass River, rather than staying in the deep water of Alice Arm. Suspecting that the unusual behavior was caused by the new molybdenum mine at Alice Arm, the man conferred with others and the matter was reported to Nisga'a Tribal Council Leaders. The leaders engaged lawyers and biologists to provide official scientific knowledge and official communication about the matter. It was quickly established that the ocean floor was being affected by the heavy metal tailings with a concentration of 400 grams of suspended solids per litre, 8,000 times greater than that allowed by the Canadian government. Somehow, the company managed to get a permit that entitled them to emit an effluent that exceeded the normal toxicity standard. [p.19]
- In some of Africa's most ecologically fragile and marginalized regions, knowledge of the local ecosystem simply means survival. Famine caused by drought, deforestation, desertification, or topsoil erosion, and declining productivity are some circumstances which may have encouraged or necessitated the acceptance of innovation. Among the traditional managenent practices which encompass the individual and community wisdom and skills of African indigenous peoples, traditional ecological knowledge (TEK) scientists list the following: indigenous soil taxonomies; soil fertility; agronomic practices such as terracing, contour banding, fallowing, organic fertilizer application, crop rotation and multicropping; indigenous soil and water conservation; and anti-desertification practices (Atteh, 1989; Lalonde, 1993).

**Characteristics of indigenous science**
Anthropologist Cruikshank (1981) describes native oral narrative traditions in the Yukon as a distinct intellectual way of knowing (epistemology) and lists several strengths as a data source. Among those that are of interest to science educators and researchers are:

**Persistence**: Most aspects of indigenous cultures have changed enormously since the last century; in part, due to resource extraction (the gold rush), highways, industrialization, government programs, and schools. However, […] stories recorded in the Yukon in 1883 were still told by women living in the Yukon in the 1970s. The structural arrangement persists even when the details of the story vary. […]

**Individual variation and consistency**: While individual narrators may all tell different versions of one story, the women with whom Cruikshank worked were most consistent in their own versions, using similar words and phrases and insisting on the importance of "getting it right" even when retelling of stories was separated by several years.

**Oral tradition as technology**: Traditional narratives may contain highly technical information. Anthropologist Robin Riddington (n.d.) suggests that oral tradition is a critical adaptive strategy for hunters and gatherers, particularly in harsh environments. […] Detailed descriptions of how to correctly make a caribousnare, how to make a snowshoe, how to trap specific animals, or how to find the way back home are variously embedded in stories. Accurate transmission from generation to generation becomes critical for group survival, therefore each generation is careful to get the critical aspects accurate. […]

**Duration of observation**: Oral traditions may provide detailed observations of natural phenomena made over a lifetime. In contrast, scientists working in laboratories, research stations, and universities are often limited to reporting on short field trips during the summer.

**Absence of documentary sources**: In regions where written documents date from the beginning of this century or back into the preceding century, oral tradition is a significant source of historical and ecological information. […]

There are also limitations. […]

**Cultural context**: Traditions passed on orally begin with very different premises from Western science and cannot readily be interpreted out of context. [p.15] Usually a scientist interested in a particular phenomenon will both pose a question and answer it within a Western frame of reference leading to a misinterpretation of a story.

**Literary style and symbolism**: Each culture has a special literary style that cannot be ignored in the analysis of narrative. Like all literature, oral narratives may seek to transform rather than accurately reflect life, and this poses problems for the scientist or historian seeking to isolate historical or scientific data. Ideally, the scientist should be skilled in all aspects of symbolic and formal narrative analysis.

**Time and space perspective**: A serious limitation for scientists is the extrapolation of linear time from oral narrative based on cyclical time. Most oral traditions do not contain even an internal sequence of time and would be undatable and unusable if other supporting evidence were not available. For example, events occurring over several generations may be condensed into a single generation. This limits the possibility that scientists can date scientific phenomenon on the basis of native traditions.

**Quantitative data**: Native resident peoples of northwest Canada do not handle quantitative data in the same manner as Western science. People may speak of "hundreds" or "thousands" of people, years, or moose when they merely mean "many." This can be most bewildering to a Western listener and limits the possibility that a scientist can date or quantify scientific phenomena on the basis of native traditions.

In summary, Cruikshank concludes that "oral tradition tends to be timeless rather than chronological, and refer to situations rather than events." Oral tradition has "a specificity of its own which puts limitations on its use." Hence, "a single tradition cannot be used by itself, but only in combination with other sources, in comparative ways."

Although cultural perspectives may make it inconvenient or difficult to incorporate traditional science examples into a Western scientific framework, science researchers and students can nonetheless learn from both the practices and the narrative stories of Native Americans. [p.16]

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## III. Connecting intercultural learning to science and mathematics education

### Activity 3.2: Homework: Science and Mathematics in different cultures

Reading for Activity 3.2 – Task 2

## Responses to diversity

**Intercultural pedagogy**
Aims of intercultural education

- Competence for intercultural understanding & intercultural dialogue
- Respect for human dignity, Recognition of (cultural) diversity & awareness for inequity
→ encourage reflection about own culture including immanent pictures of other cultures
- Attitudes, knowledge and competences, e.g.
    - Knowledge about structural disadvantages;
    - Sensitivity for possible differences
    - Ability to change perspectives
    - To stand up for equal rights and social chances independently of origin
    - Respect of differences

*Auernheimer, G. (2016). Einführung in die interkulturelle Pädagogik (8. Auflage.) Wiesbaden: Springer VS, pp. e.g. 19, 59.*

**Intercultural learning in steps**

1. Openess, Efforts for understanding, willingness to get in contact with persons from other cultures
2. Identifying tendencies of stereotyping, reflection of own prejudices, attention for racist structures
3. Insight into cultural situatedness of human behaviour, admitting to yourself when something appears strange, dealing with fear
4. Competence of intercultural understanding and communincation, awareness of asymmetry of power
5. Competence of dialogue

*Auernheimer, G. (2016). Einführung in die interkulturelle Pädagogik (8. Auflage.) Wiesbaden: Springer VS, pp. e.g. 124.*

**Multi-perspective education**

- Overcoming mono-cultural orientation and taking different perspectives
- E.g. seeing the crusades as freeing holy places
- Multiperspective analysis of the world system, multiperspective view on history, religion, science, technology
- Schools should enable an awareness of multiple cultural exchange processes (e.g. between Orient and Occident) and cultural diversity

*Auernheimer, G. (2016). Einführung in die interkulturelle Pädagogik (8. Auflage.) Wiesbaden: Springer VS, pp. e.g. 140.*

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**Inclusion**

Inclusion is seen as **a process** of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifi cations in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the regular system to educate all children.

UNESCO. (2005). *Guidelines for inclusion: Ensuring access to Education for All.* Paris: UNESCO.

Inclusive education is a process of strengthening the capacity of the education system to reach out to all learners and can thus be understood as a key strategy to achieve EFA. As an overall principle, it should guide all education policies
and practices, starting from the fact that education is a basic human right and the foundation for a more just and equal society.

UNESCO. (2009). *Policy Guidelines on Inclusion in Education.* Paris: UNESCO.

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## III. Connecting intercultural learning to science and mathematics education

### Activity 3.3: Examples of intercultural issues in science and mathematics education

**Work in groups** | **40 mins (30´+10´)**

### Work in groups. Work through the examples 1 – 5.

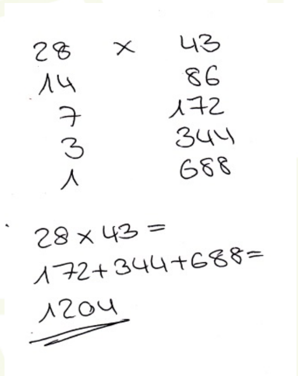
**What conclusions do you draw for a science and mathematics education which (see definitions of intercultural pedagogy and multi-perspective education) …**

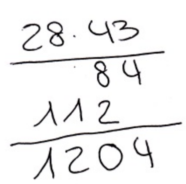
- Supports all students in learning science and mathematics independently of the cultural background
- Promotes competence for intercultural understanding & intercultural dialogue
- Respects human dignity and recognizes (cultural) diversity & awareness for inequity
- Takes a multiperspective approach to science and mathematics?
- Based on your discussion set up a list of important principles for intercultural science and mathematics education. We will discuss this afterwards.

**Based on your discussion set up a list of important principles for intercultural science and mathematics education. We will discuss this afterwards.**

## Example 1

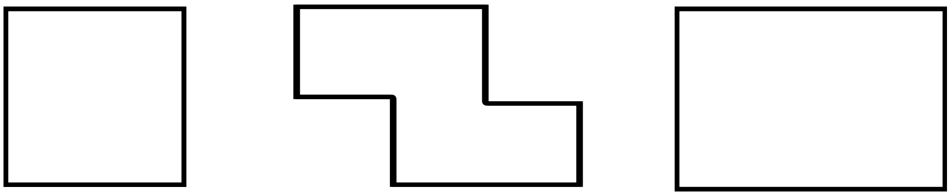
- Compare the two multiplication algorithms and explain them.



## Example 2

- Regarde ces trois objets.
- Quel objet ne fait pas partie de deux autres?
- Definis le characteristiques qui les deux ont ensemble et le troisieme n'a pas.
- Selectionne un autre object et encore une fois donne des raison pourquoi il ne fait pas partie de deux autres.
- Résous le problème en francais.
- Reflection: How did you feel when trying to solve the problem in French?



## Example 3


Annika wants to go on summer holiday with her parents. It is quite hot outsine Unfortunately, they have been stuck in a traffic jam for hours.The radio informs Anika that the traffic jam has a length of 20 km. Annika is thirsty, but at a certain point somebody from the red cross turns up and brings water for all the persons in the traffic jam.

For how many persons the red cross needs to provide water in a traffic jam of such a length?

What difficulties might a student from Tansania might have with the task?

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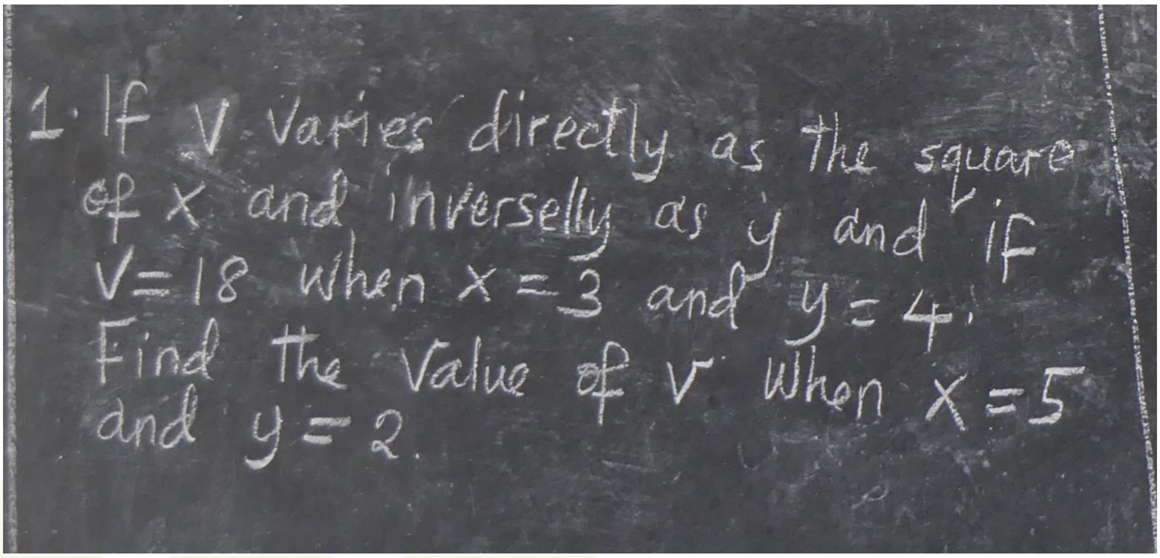
## Example 4

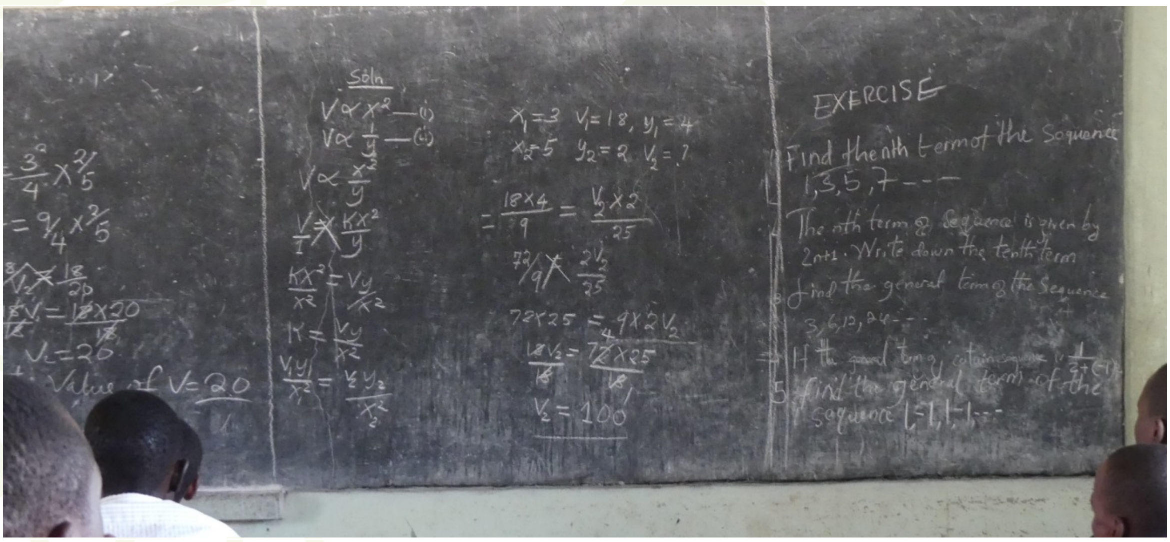

Why might this ecological pyramid be challenging for students from certain regions in Africa?

## Example 5




Mathematical task from Tanszania, class with students age 14.

Solve the task in your way.




How did the class in Tanzania solve the task?

## III. Connecting intercultural learning to science and mathematics education

### Activity 3.4: Culture and Cultural Definition

**Homework in groups**

**30 mins homework & 10 min presentation**

### Compare the mathematics curriculum for students in grade 1 and 2 in Tanzania with the curriculum in your country (or chose another country for comparison)

- For the Tanzanian curriculum see here: https://www.futureschool.com/tanzania-curriculum/#552dfa3ac3582
- Work in pairs.
- What differences can you identify?
- What consequences for your mathematics and science education arise?

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