Università di Verona

Corso di Perfezionamento – Metodologico-didattico CLIL
Area Tecnico-Scientifica

Dicembre 2015

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Introduzione

General framework: Planning the CLIL Module

School	Istituto tecnico Amministrazione Finanza Marketing, ex istituto tecnico commerciale
Teacher – responsible for the CLIL project Other teacher involved	Anita Castellani
Class involved	5th class
Age	17-19
Subjects involved	Computer science
Level of language competence of the class	B1-B2
Project phases: (Month-phase)	September – November (32 hours)
Resources, locations, materials	Interactive Whiteboard, classroom, computer lab, Internet connection, photocopies, dictionaries, moodle platform

General Plan-The CLIL Module

Module title	**Cryptography**
Teaching Units (Titles)	Cryptography and cryptanalysis
Teacher	Anita Castellani
Discipline	Computer science, English
Timeline	22 hours + 10 hours Project lab in computer laboratory
Contents (subject)	• Definition and classification of cryptography and cryptanalysis • Applications of cryptography nowadays and in the past • Steganography • secret key algorithms: transposition and substitution algorithms • electro-mechanical devices • Public key algorithms
Materials	Sheets, dictionaries, presentations, videos and applets. Cardan grille, scytale, Alberti disk, codes to crack, crossword
Relevant webography	• http://www.wordreference.com • https://en.wikipedia.org • https://www.youtube.com/user/numberphile • https://www.youtube.com/user/computerphile • http://enigma.louisedade.co.uk/enigma.html

Relevant bibliography	Codici e segreti Simon Singh BUR Reti di Computer – Tanembaum – UTET Informatica - Scorzoni 9 algoritmi che hanno cambiato il futuro – John MacCormick Apogeo
Pre-requisites-content	Binary code, representation of the information in the machine
Pre-requisites-language	B1 level (present simple, present continuous, past simple, conditionals (first and second), imperative, comparative, superlative, passive form
Aims Objectives – content (measurable)	<u>Know:</u> the main application fields of cryptography difference between cryptography and cryptanalysis different method to cover a message (steganography) the main secret key algorithms different part of the Enigma cypher machine and how it works difference between secret key algorithm and public key algorithm <u>to be able to:</u> crack a code written following a transposition column cypher? crack a code written following a substitution cypher? create an acrostic
Aims Objectives – language (measurable)	<u>Know:</u> present simple, past simple, conditional, comparative, questions, passive form, micro-language computer science little computer science glossary <u>to be able to:</u> use the English language to communicate in computer science and in a technical language appropriately describe in a simple way a procedure to encrypt a messages produce simple multiple choice questions with their answers write a text in a formal technical language
Objective – study/learning skills	use a good and flexible method of study solve a problem acquire content from different sources (written, video) use ICT most suitable for the required goals to be able to put different events in a time-line
Cross-curricular objectives	learn to work together in groups or in pairs increase self-esteem, use creativity
Procedure (classroom management)	Introduction to the topics by the teacher, activities in the classroom in groups of three/four or individually, lab project in groups of two/three.
Assessment	Tests (true/false), open questions(short/extended), exercises, project work and lab reports, puzzle
Remedial work/ reinforcement	peer education, revision in the classroom of the relevant concepts.

Teaching Unit – Short description

Step	Activities	Methodology	Time hour	Class management	Language skills RWLS	Materials
1 Warming up and motivation phase	16	teacher's introduction movie watching teacher's explanation	3	whole class groups	RWLS	Movie: The imitation game P1 presentation
2 Introduction and Practice	47	teacher's explanation problem solving video watching language exercises listen activity	9	whole class groups pairs individually	RWLS	P2, P3, P4, P5, P6 presentations videos Cardan grille Alberti disk scytale worsheet1 photocopy1 crossword crackthecode1 crackthecode2
3 Practice and Consolidation	18	surfing the net writing questions process information writing code	10	pairs	RWS	assessment1 worksheert2
4 Summing up phase	2	surfing the net merge files create a padlet	2	groups	RS	
5 Testing / Method of assessment	4	report writing written test satisfaction questionnaire oral test	4	groups individually	RWLS	template 1 assessment 2 assessment 3
6 Remedial work	5	teacher's comment	4	groups	LS	

Teaching Unit – Detailed description, Teacher plan

Unit 1: cryptography and cryptanalysis

If it is not explicitly said, the location of the lessons is always the classroom. Otherwise, it is the computer laboratory. For example, during the step 4: practice and consolidation.

In this big teaching unit, corresponding to a module, we will speak about the history of cryptography and cryptanalysis comparing the different techniques used in the past up to nowadays.
For every lesson the students have as homework to fill a glossary with the new words they have seen during the lesson.
For each activity, there is the number of the lesson (or number of the hour), the number of the activity, its name, the language skills involved, the time, the class management, and a brief description.

Step 1: Warming up and motivation phase (lead in)

Aim
The main aim is to stimulate the students curiosity about this new topic and this new methodology. Understand the concept of cryptography, cryptanalysis, the main fields in which it is used. Accept willingly the CLIL methodology.

Context
Topic: Introduction to cryptography and cryptanalysis
Total learning time: 240
Objectives
CONTENT:

- The main aim is to stimulate the students curiosity about this new topic and this new methodology.
- The difference between cryptography and cryptanalysis
- The difference between encryption algorithm and decryption algorithm
- The main field applications of cryptography nowadays and in the past
- classification of secret scriptures

LANGUAGE:

- list of Latin abbreviations
- micro-language

skills/study skills
Affective learning outcomes (Affective learning outcomes): appreciate the topic
Compare (and contrast)(Analysis): cryptography and cryptanalysis
Be responsive to (Affective learning outcomes): CLIL methodology
Identify causes of (Comprehension): the difficulties of breaking the Enigma machine, the difficulties to take it secret
Reflect (Evaluation): about Alan Turing's life

Teaching-Learning activities

H1.Activity 1. Warming up activity

Listen 5 minutes whole class
Brief introduction by the teacher about the movie: "The imitation game". Based on a true story of Alan Turing the father of Computer Science.

H1.Activity 2. Watch the movie: "The imitation game"

Watch 110 minutes whole class
The movie is in Italian with subtitles in English
materials: movie

H1.Activity 3. Break

Discuss 5 minutes students standing
Brief discussion, comments and emotions about the movie.

H2.Activity 4. Introduction about CLIL methodology

Listen 10 minutes whole class
Brief introduction about the methodology by the teacher
materials: P1 slides 1-4

H2.Activity 5. The ribbon

Practice 5 minutes whole class
Create an event: "cutting the ribbon"
The whole class goes out the classroom, the teacher stick a paper tape with the words “ENGLISH ONLY” from side to side of the door, a student breaks the tape and get in the classroom. Up that moment the whole class will speak English only.

H2.Activity 6. Explanation the aims

Listen 10 minutes whole class
Explanation the aims, the homework, the rules, the table point, the glossary filling, the prize
materials: P1 slides 5-10

H2.Activity 7. Answer to these questions

Discuss 15 minutes groups of 4 students
The students have to answer to the following questions:
Do you like the movie? Why, why not?
Which is in your opinion the most interesting sequence of the movie?

H2.Activity 8. Write the answers to these questions

Produce 15 minutes groups of 4 students
The students have to write the answers

H2.Activity 9. Sharing the answers

Read Watch Listen 5 minutes whole class
A student for every group has to read aloud the answers to the whole class

H3.Activity 10. In your opinion, what is cryptography?

Discuss/Produce 15 minutes groups of 4 students
Answer to these following questions: What is cryptography?

Write the answers on a sheet and then on the whiteboard

H3.Activity 11. What is cryptography?

Read Watch Listen 5 minutes whole class
Brief explanation on what cryptography is.
Materials: P2 slide 5-7

H3.Activity 12. Focus on the language

Listen 5 minutes whole class
main Latin abbreviations. Microlanguage
Materials: P2 slide 8-10

H3.Activity 13. Encryption and decryption algorithms

Listen 5 minutes whole class
Encryption and decryption algorithms
Materials: P2 Slides 11-12

H3.Activity 14. In your opinion, Why are we learning it?

Brainstorming/Discuss/Produce 15 minutes groups of 4 students
Answer to the question: Why are we learning it?

H3.Activity 15. The main fields applications of cryptography

Listen 10 minutes whole class
The main application fields of cryptography
Materials: P2 Slides 13-22

H3.Activity 16. Plenary

Discuss 5 minutes whole class
What have you learned today?
What was difficult? What was surprising?
Homework
Fill the glossary with the new words.

Step 2: Introduction and Practice

Aims

The main aim is to study in details all the techniques used in past and nowadays in order to have a secure communication. Understand the strength and weaknesses of the different techniques to send messages in a secure way. Techniques to crack the codes. At the end of every lesson or couple of lessons they have to fill in the glossary on the e-learning platform according to the first letter of the new word and the surname of the student, a letter or two depending on the frequencies of the first letter. Fill in the personal glossary.

Context

Topic: Techniques of secret scriptures
Total learning time: 540 minutes (9 hours)

Objectives

CONTENT:

- Steganography
- Secret key algorithms
- Electro-mechanical devices
- Asymmetric encryption

LANGUAGE:

- false friends
- connectives (adding, illustrating, cause and effect, contrasting)
- mathematical idioms
- micro-language

Skills/study skills

Label (Knowledge): the main part of the Enigma machines
classify (comprehension): a cryptographic technique
solve (application): a crossword, a puzzle
produce (application): an acronym
compare and contrast (analysis): two different techniques

Teaching-Learning activities

H1.Activity 1. Revision of new words

Practice 5 minutes whole class
Five students go to the LIM and write a new word they learned last lesson

H1.Activity 2. Introduction to steganography

Read Watch Listen 5 minutes whole class
Brief explanation on what steganography is.
Materials: P3 slide 1-3

H1.Activity 3 Focus on the language

Read Watch Listen 5 minutes whole class
Difference between steganography and shorthand
Materials: P3 slide 4

H1.Activity 4. techniques of steganography

Read Watch Listen 10 minutes whole class
Brief explanation on some techniques:
Materials: P3 slide 5-9

H1.Activity 5. The Cardan Grille

Practice 10 minutes 2 volunteers, 2 volunteers the other watch
Simulation of encryption messages with a Cardan Grill
Materials: A Cardan Grille

H1.Activity 6. techniques of steganography

Read Watch Listen 5 minutes whole class
Brief explanation on some techniques:
Materials: P3 slide 10-12

H1.Activity 7. Focus on the language

Listen 5 minutes whole class
Microlanguage
Materials: P3 slide 13

H1.Activity 8. Acrostic

Produce 15 minutes groups
Create an acrostic and every group writes its acrostic on the interactive Board.

H2.Activity 9. Digital steganography

Read Watch Listen 10 minutes individually
Read the photocopy about digital steganography
Material: photocopy1

H2.Activity10. Focus on the language

Listen 10 minutes whole
Connectors
Material: P3 slide 17-18

H2.Activity11. Focus on the language

Read 15 minutes individually
Underline the connectors and the Latin abbreviations
Material: photocopy1

H2.Activity12. Focus on the language

Read aloud and check 15 minutes whole
Underline the connectors
Material: photocopy1

H2.Activity 13. Plenary

Discuss 10 minutes whole class
What have you learned today?
What was difficult? What was surprising?

H3.Activity 14. Revision of new words

Practice 5 minutes whole class

Five students go to the LIM and write a new word they learned last lesson

H3.Activity 15. Classification of secret scriptures

Read Watch Listen 5 minutes whole class
Brief explanation of secret scriptures and scytale
Materials: P3 slide 1-5

H3.Activity 16. The scytale

Practice 5 minutes 2 volunteers, 2 volunteers the other watch
Simulation of encryption messages with a Cardan Grill
Materials: Two different scytales

H3.Activity 17. Transposition algorithms

Read Watch Listen 10 minutes whole class
Explanation of the transposition column cypher and rail fence cypher
Materials: P3 slide 6-7

H3.Activity 18. Crack the code!

Investigate Produce 20 minutes groups
Crack the code given and write on the board the solution
Materials: Crack the Code1

H3.Activity 19. Substitution algorithms

Read Watch Listen 15 minutes whole class
Explanation of the substitution algorithms
Materials: P3 slide 9-14

H4.Activity 20. Crack the code!

Investigate 60 minutes groups
Crack the code given
Materials: Crack the Code2

H5.Activity 21. Alberti Disk 1

Read Watch Listen 5 minutes whole class
Brief explanation of the Alberti Disk
Materials: P3 slide 16

H5.Activity 22. Alberti Disk 2

Practice 5 minutes 2 volunteers, 2 volunteers the other watch
Simulation of encryption messages with a Alberti Disk
Materials: 2 Alberti Disks

H5.Activity 23. Polyalphabetic encryption

Read Watch Listen 10 minutes whole class
Brief explanation of polyalphabetic encryption and how to break it
Materials: P3 slide 17-18

H5.Activity 24. Focus on the language

Listen 5 minutes whole class
Microlanguage
Materials: P3 slide 19

H5.Activity 25. Revision

Produce Synthesis 20 minutes individually
Answer to the questions
Materials: Worksheet1

H5.Activity 26. Correction of the revision

Read 15 minutes whole class
Correction of the answer one for each student
Materials: Worksheet1

H6.Activity 27. Cryptography and the WW2

Read Watch Listen 5 minutes whole class
Brief introduction to Cryptography and the WW2
Materials: P4 slide 1-3

H6.Activity 28. Focus on the language

Listen 5 minutes whole class
Microlanguage: technical language
Materials: P4 slide 4

H6.Activity 29. watching the video: the Enigma machine

Watch Listen 15 minutes whole class
How Enigma works
Materials: **https://www.youtube.com/watch?v=G2_Q9FoD-oQ**

H6.Activity 30. Enigma permutations, London and Bletchley Park

Listen 10 minutes whole class
Brief introduction to Cryptography and the WW2
Materials: P4 slide 6-10

H6.Activity 31. Solve the crossword!

Investigate 25 minutes groups
Solve the crossword given
Materials: crossword

H7.Activity 32. Breaking Enigma

Read Watch Listen 5 minutes whole class
Weaknesses of Enigma
Materials: P5 slide 2-4

H7.Activity 33. watching the video: Flaw in the Enigma code

Watch Listen 10 minutes whole class
Flaw in the Enigma code
Materials:**https://www.youtube.com/watch?v=V4V2bpZlqx8**

H7.Activity 34. The Naval Enigma and Bombe

Read Watch Listen 5 minutes whole class
The Naval Enigma and Bombe
Materials: P5 slide 6-7

H7.Activity 35. watching the interview by David Kahn

Watch Listen 10 minutes whole class
Interview about the Naval Enigma and how the codebreakers helped to win the war
Materials:**https://www.youtube.com/watch?v=V4V2bpZlqx8** P5 slide 8

H7.Activity 36. Fill in the gaps

Listen 10 minutes individually
Fill in the gaps

Materials: **https://www.youtube.com/watch?v=V4V2bpZlqx8**

H7.Activity 37. Correction on Fill in the gaps

Watch Listen 15 minutes whole class
corrections Fill in the gaps
Materials: **https://www.youtube.com/watch?v=V4V2bpZlqx8**

H7.Activity 38. Focus on the language

Listen 5 minutes whole class
Microlanguage
Materials: P5 slide 10

H8.Activity 39. Emulating Enigma

Practice 50 minutes pairs
Explanation and use a software in order to emulate the Enigma machine
Materials: P5 slide 11, computer, **http://enigma.louisedade.co.uk/enigma.html**

H8.Activity 40. Discussion about the previous activity

Discussion 5 minutes whole class

H8.Activity 41. The other code used in the WW2 and consequences

Read Watch Listen 5 minutes whole class
Cambridge Spy, Russians, battle of Kursk, Navaho
Materials: P5 slide 11-15

H9.Activity 42. Focus on the language

Listen 5 minutes whole class
Mathematical idioms

Materials: P6 slide 2

H9.Activity 43. Asymmetric encryption

Listen 15 minutes whole class
Introduction to asymmetric encryption and a shared secret
Materials: P6 slide 3-8

H9.Activity 44. Simulation the trick with the numbers

Practice 5 minutes pairs
Each student chooses a number and they follow the steps shown in the slide
Materials: P6 slide 9

H9.Activity 45. The arithmetic of the clock

Listen 15 minutes whole class
Explanation of the arithmetic of the clock
Materials: P6 slide 10-12

H9.Activity 46. Simulation the trick with the arithmetic of the clock

Practice 10 minutes other pairs
Each student chooses a number and they follow the steps shown in the slide
Materials: P6 slide 13

H9.Activity 47. conclusion

Listen 5 minutes whole class
Explanation of the arithmetic of the clock
Materials: P6 slide 13-15

Step 3: Practice and Consolidation

Aim

The aim is thought in order to start the revision and the consolidation of all that we have learned until now about cryptography. The aim is to practice and deepen the new concepts they have learned. The students, divided into 8 groups of two, have to underline the main points of all the module. Every group is responsible for a subtopic. They have to design and to develop an e-learning dynamic Web site in order to teach cryptography in an easy and enjoyable way. They have to create questions and the respective possible answers. They have to write a formal report about the whole work.

Context

Topic: Cryptography and php lab project
Total learning time: 600 minutes (10 hours)

Objectives
CONTENT:

- Cryptography

LANGUAGE:

- asking questions
- formal language to write a report
- enrich the scientific-technological glossary
- use of the passive form, cause-effect connectives, sequencing connectives

Skills/study skills
Clarify (Comprehension): clarify every encryption method
Describe reasons for (Comprehension): an encryption method is good or bad
Appreciate (Affective learning outcomes):appreciate this method of work
Evaluate (Evaluation): evaluate an encryption method
Select (Analysis): select and choose good material in order to teach cryptography

Teaching-Learning activities

H1.Activity 1. Explanation of the aim

Listen 10 minutes whole class computer lab
The teacher read carefully the aim and answers to the questions the students can ask.
The teacher read the groups and the criteria used to form them.
Materials: Assessment1

H1.Activity 2. Choice of the sub-aim

Practice 10 minutes 8 students computer lab
A student for every group has to draw random one of 8 subtopic

H1.Activity 3. The aim

Read Watch Listen 10 minutes 2 students computer lab
They have to read carefully the aim of the work and they can ask to the teacher

H1.Activity 4. The tasks and the name

Discuss 30 minutes 2 students computer lab
They have to divide the tasks and think about a beautiful name for the group. They have to prepare the logbook.

H2.Activity 5. Searching materials

Investigate 60 minutes student computer lab
They have to search in Internet good materials, good websites, good videos, good images.
They can use also my presentations which are available on the moodle platform of the school.

H3-H4.Activity 6. Writing

Produce 115 minutes student computer lab
They have to write dynamic web pages, using notepad+, expression web, easyphp

H4.Activity 7. Update the logbook

Collaborate 5 minutes 2-3 students computer lab
They have to write the logbook using office tools.

H5. Activity 8. Focus on the language read

Read 15 minutes whole class
read material asking questions
materials: worksheet 2

H5. Activity 9. Focus on the language speak

speak 20 minutes whole class
Every student asks a question to a partner who answers.

H5. Activity 10. Focus on the language write

write 15 minutes whole class
every student does the exercises
materials: worksheet 2

H5. Activity 11. Focus on the language

write 10 minutes whole class
every student reads his answer
materials: worksheet 2

H6-H7.Activity 12. Writing

Produce 115 minutes student computer lab
They have to process the material found
They have to write simple questions with relative answers

H7.Activity 13. Update the logbook

Collaborate 5 minutes 2-3 students computer lab
They have to write the logbook using office tools.

H8.Activity 14. Join the different work

Collaborate/discuss 30 minutes 2-3 students computer lab
They have to discuss how to join the different parts of the work in a suitable way.

H8.Activity 15. Writing

Produce 25 minutes student computer lab
They have to modify what they have done in order to have a homogeneous work.

H8.Activity 16. Update the logbook

Collaborate 5 minutes 2-3 students computer lab
They have to write the logbook using office tools.

H9-H10.Activity 17. Writing

Produce 115 minutes student computer lab

They have to write dynamic web pages, using notepad+, expression web, easyphp

H10.Activity 18. update the logbook

Collaborate 5 minutes 2-3 students computer lab
They have to write the logbook using office tools.

Step 4: Summing up phase

Aim
This aim is to summarize all we have made.

Context

Topic: Cryptography
Total learning time: 120 minutes (2 hours)

Objectives

CONTENT:
- Cryptography

LANGUAGE:
- speaking

Skills/study skills
conclude (synthesis): the work and exchange the files
produce (application): create a padlet
organize(synthesis): the material for the padlet

Teaching-Learning activities

H1.Activity 1. Merge

collaborate 60 minutes groups computer lab
All the groups give their files to the group number one in order to join all the different works in one homogeneous work

H2.Activity 2. A padlet

collaborate 60 minutes groups computer lab

All the students create a padlet about the history of cryptography

Step 5: Testing / Method of assessment

Aim

This aim is to test if the students have learned and how. Summative and formative assessments are taken into consideration.

Context

Topic: Cryptography
Total learning time: 240 minutes (4 hours)

Teaching-Learning activities

H1.Activity 1. The report, the lab test

Produce 60 minutes 2 students computer lab
They have to write the final report of the lab work.
Materials: template 1

H2.Activity 2. The written test

Produce 60 minutes 2 students
They have to answer to the questions.
Materials: assessment 2

H3-H4.Activity 3A.3B.3C.3D.3E.3F The oral test

Speak 15 minutes 2-3 students
They have to answer to the oral questions asked by the teacher

H4.Activity 4. The self-assessment

Produce 30 minutes whole class, individually

They have to answer to the questions following a grid, a satisfaction questionnaire and a self-assessment.

Materials: assessment 3

Step 6: Remedial work

Aim
This aim is to improve poor skills in some students

Context

Topic: Cryptography
Total learning time: 180 minutes (3 hours)

Teaching-Learning activities

H1.Activity 1. Correction the written test

Read 60 minutes whole class
The teacher gives back the students the previous corrected test and shows them the mistakes. They have to read the correct answers and copy them.

H2.Activity 2 The self-assessment

listen 30 minutes whole class, individually

The teacher reads the processed outcomes of the tests

H2.Activity 3. Correction the lab work and of the report

Discuss 30 minutes whole class
The teacher gives back the students the previous corrected report and lab project and shows them the mistakes. The students have to understand their mistakes.

H3.Activity 4. Peer 2 peer

Discuss 60 minutes pair

The students have to work in pair and speak about what they haven't understood yet.

H4. Activity 5. Conclusion: Award ceremony

Listen speak celebrate 60 minutes whole class

The teacher awards the student who wins the prize as best student in the CLIL unit.

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Appendix

A–Glossary

asset /ˈæset/= a useful and desirable thing or quality; a single item of ownership having exchange value (business)
authenticity /ˌɔːθenˈtɪsɪtɪ/= the condition of being authentic, genuine, or true
conceal /kənˈsiːl/ =to hide; cover or keep from sight:to keep secret; avoid disclosing
convoy = a group of ships or vehicles traveling together, typically accompanied by armed troops, warships for protection.
courier = a messenger
cypher = /ˈsaɪfəʳ/ Any of the Arabic numerals or figures.‖= cipher = a secret method of writing, as by code.
cyphertext = coded text
device/dɪˈvaɪs/ = a thing made for a particular purpose, esp. a mechanical or electric invention:
exponent/eksˈpəʊnənt/=a mathematical symbol or number placed above and after another symbol to denote the power
exponentiation = mathematical operation, written as b^n, involving two numbers, the base b and the exponent n.
feature = an important part or characteristic
havoc /ˈhævək/ = great destruction or devastation
hockey pack =a black disk made of hard rubber, the focus of play in ice hockey.
intended /ɪnˈtendɪd/ = proposed; desired
irreversible /ˌɪrɪˈvɜːsəbl/= capable of changing or producing a change in one direction only
parchment =the skin of sheep, goats, etc., prepared so as to be written on.
payload = the part of a cargo that produces income, usually expressed in weight.
plaintext = uncoded text
power = the number one obtains by multiplying a quantity by itself one or more times.
prime number = divisible by 1 or itself
receiver = recipient = who receives
remainder= /rɪˈmeɪndəʳ/=the quantity that is left after subtraction /the number that is left over after dividing two numbers
ridge /rɪdʒ/ = the long and narrow upper edge of something, as a hill or wave
ridged /rɪdʒd/ =having, formed into, or showing ridges
seizure = the action of capturing someone or something using force.
sender = who sends
shipyard = a place where ships are built and repaired.
shorthand = a method of fast handwriting using simple strokes, abbreviations, for letters, words, or phrases
siege = the act of surrounding and attacking a fortified place in such a way as to force the surrender of the defenders
steam /stiːm/= water in the form of an invisible gas or vapor
stegosaur /ˈstɛgəˌsɔː/ = a plant-eating dinosaur from the Jurassic and Cretaceous periods
strength /strɛŋkθ, strɛnθ/ = the quality of being strong; power of resistance

template = Building a pattern to help measure or to help in making copies of a thing
to add = /æd/ Mathematics to find the sum of
to blend /blɛnd/ = to mix smoothly together
to bottle up = place (drinks or other liquid) in bottles or jars.
to break = to crack = to solve
to carry out = to perform or cause to be implemented; to bring to completion; accomplish
to conceal /kənˈsil/ = to hide; cover or keep from sight
to convict /kənˈvɪkt/=to prove or declare (someone) guilty of an offense, esp. after a legal trial
to disguise /dɪsˈgaɪz/ = to conceal the truth of by a false form or appearance
to divert = cause (someone or something) to change course or turn from one direction to another.
to divide by = /dɪˈvaɪd/ =to separate into equal parts by the process of mathematical division;
to flee (fled, fled) /fli:/ = to escape = to run away from
to hire /ˈhaɪəʳ/= to employ somebody
to line up = stand or be positioned at intervals along.
to multiple by =/ˈmʌltɪpl/ (times by a number)
to raise /reɪz/= to elevate
to salvage = to rescue = rescue (a wrecked or disabled ship or its cargo) from loss at sea.
to shorten = make or become shorter
to shrink (shrank, shrunk)= to contract in size
to sink sank sunk = go down below the surface of something, especially of a liquid;
to spell out = to explain something plainly
to squeeze = firmly press (something soft or yielding), typically with one's fingers.
to subtract = /səbˈtrækt/ = to take (one number or quantity) from another;
to wrap = to wind or fold (something) around as a covering.
to wrap /ræp/ = to enclose or cover in something wound or folded about.
troops /tru:ps/ = a body of soldiers, police, etc.: (always plural)
unintelligible = that cannot be understood, seen clearly, or read clearly.
weakness /ˈwi:knɪs/= the state or quality of being weak; lack of strength
whim = a sudden desire or change of mind, especially one that is unusual or unexplained.
wolf pack = a group of people that operate as a hunting and attacking pack, e.g. (submarines or aircraft).