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BoConTeam
Boosting Contemporary Teaching Methods for Europe

ERASMUS PLUS PROGRAMME

KA2 – Cooperation and Innovation for Good Practices

Strategic Partnerships for Vocational Education and Training

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“Boosting Contemporary Teaching Methods for Europe”
BoConTeam4EU

C2 Augmented Reality as a Tool in Education

Augmented Reality as a Tool in Education

1. General concepts of Total Quality Management in education

Total Quality Management (TQM) is recognized as an effective management philosophy which is used as a strategy for business excellence.

The concept of total quality management was advocated by Dr. W. Edwards Deming in the late1950's in the USA;

Japan was the first national who embraced this concept to recover their economy after the World War II.

The success of TQM in Japan made this concept famous in many countries across the world.

Originally, the concept was developed for manufacturing organizations; later on, it gained popularity to other service institutions, including bank, insurance, non-profit organizations, health care and so on. Lunenburg comments that TQM is also relevant to corporations, service organizations, universities, and elementary and secondary schools [1].

Now, TQM is recognized as a generic management tool and applicable to any organization.

01. What is Quality?

Quality is generally defined as conformance to requirements.

It is also conformance to a standard that is required.

However, many consider that quality need not just be conformance to requirements but should be an assurance of being the best in the world of that type.

02. What is Total Quality?

Total quality refers not only to the product but also to the way the product is made as well as presented to the customer. Total quality asks for customer orientation, process orientation, people management and leadership.

03. What is TQM?

TQM is a people driven process.

It involves changes in people's attitudes primarily.

In addition, it deals with process orientation and continuous improvement of the process.

It strives for empowerment and autonomy of the people involved in using processes of production.

It asks people to continuously look for new ways to adapt to the changing environment.

It is a continuous improvement plan, with an effort to bring out the best for the stakeholders as well as for the institution.

TQM is not a single individual's initiative. It is a collective effort towards achievements.

KEY TAKEAWAYS

- Total quality management (TQM) is an ongoing process of detecting and reducing or eliminating errors.
- It is used to streamline supply chain management, improve customer service, and ensure that employees are trained.
- The focus is to improve the quality of an organization's outputs, including goods and services, through the continual improvement of internal practices.
- Total quality management aims to hold all parties involved in the production process accountable for the overall quality of the final product or service.

Total quality management (TQM), a management philosophy developed for industrial purposes, is now attracting increasing attention in the field of education

Different interpretations of TQM in industry, however, may result in contrasting outcomes when TQM is applied in schools.

Students are our beacons of hope.

Teachers train them to be leaders of tomorrow.

Regarding the applicability of TQM in education, there is a serious debate since this concept was initially developed for manufacturing organizations.

It is essential to resolve this problem. While conducting an initial investigation it was also revealed that there are critical challenges in implementing TQM in education.

It is also imperative to explore the nature of those challenges so that academic institutions can take proper measure proactively while pursuing TQM in education.

When trying to understand quality it is always necessary to answer two fundamental questions:

First: what is the product?

And the second: who are the customers?

Both questions have full applicability in the case of education as well

There are important differences between education and industry that lead to a different interpretation of the notion of "quality":

• The school is not a factory

• Students are not the product

• The product of the school is the education of the students

• Customers for this product are: students, their parents, future employers of students, the community

• Students must be co-managers of their own education

• There is no possibility to recall the product in case of non-compliance

Total quality management (TQM) is **the continual process of detecting and reducing or eliminating errors in manufacturing, streamlining supply chain management**, improving the customer experience, and ensuring that employees are up to speed with training.

TQM approach in education involves not only **achieving high quality** but also influencing all segments of the educational process: organization, management, interpersonal relations, material and human resources, etc. ... As the top management leader, the school administrators are obliged to meet such requirements.

What is TQM and its importance in education?

Total Quality Management (TQM) is methodology that facilities adapting to today's changing external environment. It enhances a **feeling of confidence and trust and alleviates insecurity and fear** among members of an institution. ... For an educational institution, its primary customer is the student.

School started to explore the potential for applying the TQM philosophy to education, this requires the number of changes in any educational institution particularly in

- the attitudes and activities of the leadership and educators,
- in the organization,

- In the monitoring of educational process,
- in the evaluation of the result,
- in the culture of communication,
- in the school atmosphere and especially in the area of interpersonal relations.

When TQM is implemented, the hierarchy among colleagues, the environment, the culture and the ambience of the organization will undergo a change.

New questions get asked.

For example, are our activities creating value for the students?

From the outset, we must be open to major changes.

Elements of TQM

01. Customer Focus

It is important to focus on the customer, both internal and external i.e., the employees and the users of the end product - the students.

In TQM parlance, the customer is the next process and not just a person who pays for the product or service.

This concept helps to strengthen the co-operation within the organisation, eliminate internal competition and drives away fear.

02. Employee involvement

People at all levels make up an organisation and their full involvement enables their abilities to be used for an institution's benefit.

03. Continuous Improvement

There is a beginning to the process of TQM, but there is no end. Checking, rechecking, valuation, revaluation, engineering and re-engineering are essential to ensure continuous improvement.

04. Universal Responsibility

A TQM leader has to learn that inspection is not a means to achieve quality. One eliminates the need for inspection by building quality into the product in the first place. TQM helps us to recognize the fact that it is we ourselves who are responsible for quality work, not someone else who will check it after it is done.

05. A Sustained Management Commitment to Quality

An organisation's performance and culture will ultimately reflect its senior management's values. If an organisation is serious about implementing TQM, the commitment to do so has

to start at the top, and the organisation's senior management has to be unwavering in its commitment to quality.

06. Addressing Deficiencies

TQM is a management philosophy that seeks to prevent poor quality in products and services, rather than simply to detect and sort out defects. "An ounce of prevention is worth a pound of cure".

07. Quality Measurement

"If you do not know where you are going, you will probably end up somewhere" is a saying particularly relevant to TQM. The quality measurement aspect of TQM asks the question: where are we and where are we going? A basic TQM concept is that quality is a measurable commodity, and in order to improve, we need to know where we are (or stated differently, what the current quality levels are), and we need to have some idea of where we are going (or what quality levels we aspire to reach).

08. Benchmarking

Benchmarking consists of identifying other organisations that perform well and incorporating their wisdom into one's organisation. This TQM philosophy consists of defining the competitors' best features from both internal and customer perspectives, and then adapting the best practices of these organisations to one's functioning.

9. Value Improvement

The essence of value improvement is the ability to meet

or exceed customer expectations while eliminating unnecessary expenditure. Removing unnecessary costs while simultaneously satisfying customer expectations and requirements can only serve to increase customer satisfaction (after all, the customer is receiving the same level of quality for a lower cost). Simply cutting costs, however, will not improve value if the focus does not remain on satisfying customer requirements and expectations.

10. Training

Training is basic to the TQM process. Several concepts and technologies are inherent to TQM. In order to use these concepts and technologies effectively, people have to be trained. Yet another saying comes to mind: "If you think training is expensive try ignorance."

TQM through Teamwork

- Teamwork is an essential component of the implementation of TQM, for it builds trust, improves communication and develops independence.
- TQM teamwork should include both academic and support staff and has to be used in a wide range of decision making and problem solving situations.
- TQM teams are not just there to administer various projects or activities. They can also be used to achieve specific goals.

- TQM teams should become the engines of quality improvement.

Stages of team formation

- Teamwork, however, does not happen automatically. Being part of a team is not a natural human function, it is learned. Training in teamwork is necessary.
- The members of the team should learn to work together.
- Teams are made up of individuals with different personalities, ideas, strengths, weaknesses, and levels of enthusiasm.

Stages of team formation

- Forming
- Storming
- Norming
- Performing

Forming Stage

At this stage, people are not made into a team.

It is just a collection of individuals. There is a range of emotions associated with this stage, from excitement, optimism, pride, and anticipation to fear, suspicion and anxiety.

At this stage the team may be easily distracted and can start dealing with matters outside its purview. Some of the members may be only concerned with stamping their identity on the group, than working on the task. But these are normal, necessary and essential processes which any team may go through.

The team leader should give directions and impart sufficient knowledge to the team members to enable the team to function effectively.

Storming Stage

Some teams never form, they directly proceed to the next stage known as Storming. This is a most uncomfortable period. In this stage members of the team realise the scale of the tasks ahead and start reacting negatively to the challenges. Some of them may try to lay down personal agendas. Interpersonal hostilities may arise. It is a period when members begin to understand each other. Humour and patience are important qualities for team leaders at this stage.

Norming Stage

At this stage, the team decides and develops its method of working. The team establishes its own rules or norms and sorts out the roles of the members. If the rules are well defined and understood by the team members, there is a good chance of the team performing well.

Performing Stage

This is the fourth stage in the process of group formation. By this time members have worked out their differences and are pretty well aware of their tasks and have merged together into a mature team.

This is the stage of performance.

Effective Teams

- The team needs to have the roles of its members clearly defined.
- The team needs clear purposes and goals.
- The team needs basic resources to operate.
- The team needs to know its accountability and limits of its authority
- The team needs a plan to work.
- The team needs a set of rules to work.
- The team needs to use appropriate tools to tackle problems and to arrive at solutions.
- The team needs to develop beneficial team behaviour.
- The team should have control over the process.

Behaviour and Skills

They include the ability to:

- Initiate discussions
- Seek information.
- Suggest procedures for reaching goals.
- Clarify or elaborate on ideas
- Summarize different ideas
- Act as gatekeepers: Direct conversational traffic, avoid simulations, deal with dominating speakers, elicit information, prevent conversation from digressing
- Compromise and be creative in resolving differences
- Try to ease tensions in the group
- Get the group to agree on standards.
- Refer to documentation and data
- Praise and correct others with equal fairness, accept both praise and complaints with equanimity.

Tools and Techniques for Quality Improvement

Additional Quality Control Tools

1. Affinity Diagrams

2. Relations Diagrams

3. Tree Diagrams

4. Matrix Diagrams

5. Arrow Diagrams

6. Process Decision Program Charts

7. Matrix Data Analysis

Other Supportive Tools particularly useful for educational institutions

1. **Brain Storming**

It taps the creativity of a team and allows team members to generate ideas and issues quickly. Someone has to be nominated to write the ideas clearly in a manner visible to all. He or she should list all the ideas as they are presented without any reservations expressed by other members or the idea getting criticized.

2. Career Path Mapping

A valuable exercise for an institution is to establish the students' career path and to identify each milestone and quality characteristics and set it against quality standards that should be in place. It is based on the idea that there are two opposing forces to change. One force is for providing the change, while the other is opposing it or insisting on the continuance. The document prepared becomes a useful tool.

03. Benchmarking

A benchmark is a standard against which the product or performance can be measured. Every product or performance conforming to the set standards assures quality. Every member of every team will be involving in activities associated with the end product or its performance to reach the standards set by the benchmark. The benchmark ultimately becomes a goal towards which the management and the employees will be collectively working.

04. Quality Circles

There may be many people doing the same type of work. They can join together and consult each other for improvement in both the quality of the product and the quality of processes. This can lead to new discoveries and quality assurances. Quality circles, once formed, can function through regular meetings and establish new methods of functioning.

05. Strategic Planning

Quality does not just happen. It must be planned for. Quality needs to be approached systematically using rigorous strategic planning techniques.

Strategic planning is one of the major planks of TQM. Institutions should have a clear long-term vision. A strong vision is one of the most important success factors for any institution. Strategic planning supports long-term priorities and it enables institutional change to be tackled in a rational manner. Strategic planning also is a continuous process.

06. Continuous Learning Processes

An institution has to be a continuous learner to improve the quality of the product or its performance. People who have closed mindsets will not be able to contribute to any learning whereas a continuous learner continues to discover new methods of learning. TQ Managers have to identify people, to start with, who are willing to learn new things towards innovations or experimentation. Of course, all learning will have to contribute to customer satisfaction.

07. Evaluation Processes

Quality performance is possible only when every experiment or innovation done is evaluated. Evaluations themselves cannot be of one type. Also, evaluations are necessary at every level of performance and every stage of improvement.

Systematic evaluations have to be built into any process of improvement. Compiling grades available in various areas and comparing them also have to be done to discover areas of improvement.

The TQM Roadmap

1.Initialization of TQM

SWOT Analysis-example

Strengths	Weaknesses
✓ **Enthusiastic management team** ✓ **Excellent examination results** ✓ **Strong departments** ✓ **Strong parental support** ✓ **Good staff morale** ✓ **Good support from the Government.**	○ **Old buildings in poor condition.** ○ **High average age of staff** ○ **Inadequate budget** ○ **Lack of playgrounds** ○ **Inadequate sports facilities** ○ **Inadequate library** ○ **No feeder schools**
Opportunities	**Threats**
✓ **Merger with local institutions with an** ✓ **excellent infrastructure but mediocre reputation.** ✓ **Develop reputation in sports.** ✓ **The excitement of establishing a new institution.** ✓ **The opportunity to enlarge staff expertise in order to increase the range of activities.** ✓ **Willingness of the faculty to undergo training and development.** ✓ **Possibility of help from old students.**	○ **Loss of identity, strengths and reputation.** ○ **Risk of losing experienced teachers who may take up early retirement or move to other institutions.** ○ **The ethos of another institution, in case of a merger, may change existing culture.** ○ **Large numbers that may make handling unwieldy.** ○ **Unforeseen changes in work ethics due to cross cultural behaviour.** ○ **Pressure for admissions from locals.**

2. Implementing TQM

- In any institution a TQM movement has to be initiated and implemented by the top management.
- The implementation of TQM in educational institutions will begin by first identifying the reasons for change. This exercise may be initiated through brain storming among key functionaries.
- an environment building exercise should be followed through workshops and seminars to create awareness about quality issues and to open up the communication channels.

- TQM planning teams headed by the Principal of the college or Head of the Institution (Management) or his nominee should be constituted.
- The planning team will provide guidance and leadership to the TQM movement.
- Development of vision and mission statements as well as strategic action plan could be taken up through workshops.
- Simultaneously, flow charts of the core processes which require change may be drawn up.
- Thereafter attempts must be made to develop norms and standards for key processes
- For every theme or activity identified under TQM, the Core Team/Improvement Team or taskforce will be primarily responsible.
- The said teams must identify strategies and techniques for addressing the theme/issue.
- The improvement team must fix dates and the time for team meetings. The teams should be encouraged to complete their task in a time bound manner.
- It would be useful for the Improvement Team to benchmark important processes with similar organizations.
- The Improvement Teams must document the status of the processes before and after initiating TQM - Base Line Study, Mid term assessment and continuous monitoring and assessment. This will enable the institution to measure tangible results.

Barriers to Overcome

1. Vision and Mission of Top Management
2. Complacency and Satisfaction
3. Volume of Work
4. Lack of adequate resources - material as well as human
5. Middle Management Power
6. Fear of Empowerment
7. Skeptics and Cynics
8. Accountability and Transparency

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2. Key Competences for 21st Century Citizens

Categorisation of 21st Century Skills : Various Frameworks

While they **may be named differently** across the world (key competences; core competences; essential skills; 21st century skills in education systems), they tend to be very similar in the competences that are seen as important.
Growing internationalisation, the rapid pace of change, and the continuous roll-out of new technologies.

The Glossary of Education defines 21st Century Skills1 as follows:
"The term 21st century skills refers to a broad set of knowledge, skills, work habits, and character traits that are believed— by educators, school reformers, college professors, employers, and others—to be critically important to success in today's world."

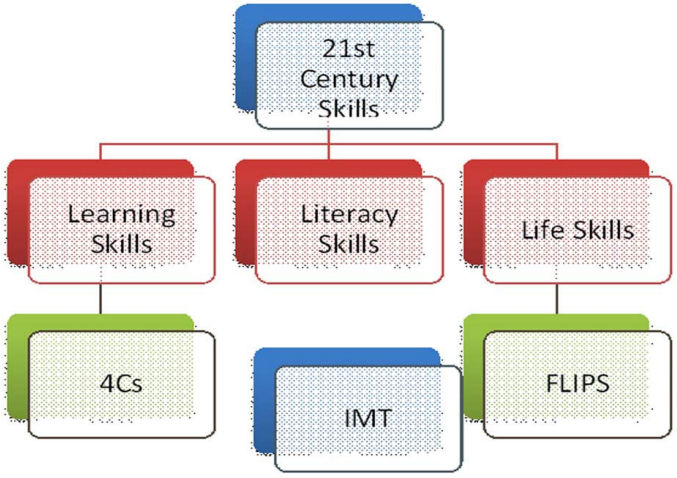
In simple terms, 21st Century Skills refer to the skills that are required to enable an individual to face the challenges of the 21st century world that is globally-active, digitally transforming, collaboratively moving forward, creatively progressing, seeking competent human-resource and quick in adopting changes.

The four principles identified as the Four Pillars of Education:
Learning to Know,
Learning to Do,
Learning to Be,
Learning to Live Together.

On the basis of the historical development of 21st Century Skills, it can be stated that 21st century skills broadly consist of three
main skill sets or 3 Ls - namely,
Learning Skills, Life Skills and Literacy Skills.

- Learning Skills: skills required for the acquisition of new knowledge.
- Literacy Skills: skills that help in creating and gaining new knowledge through reading, media and digital resources
- Life Skills: skills required for successfully leading everyday life

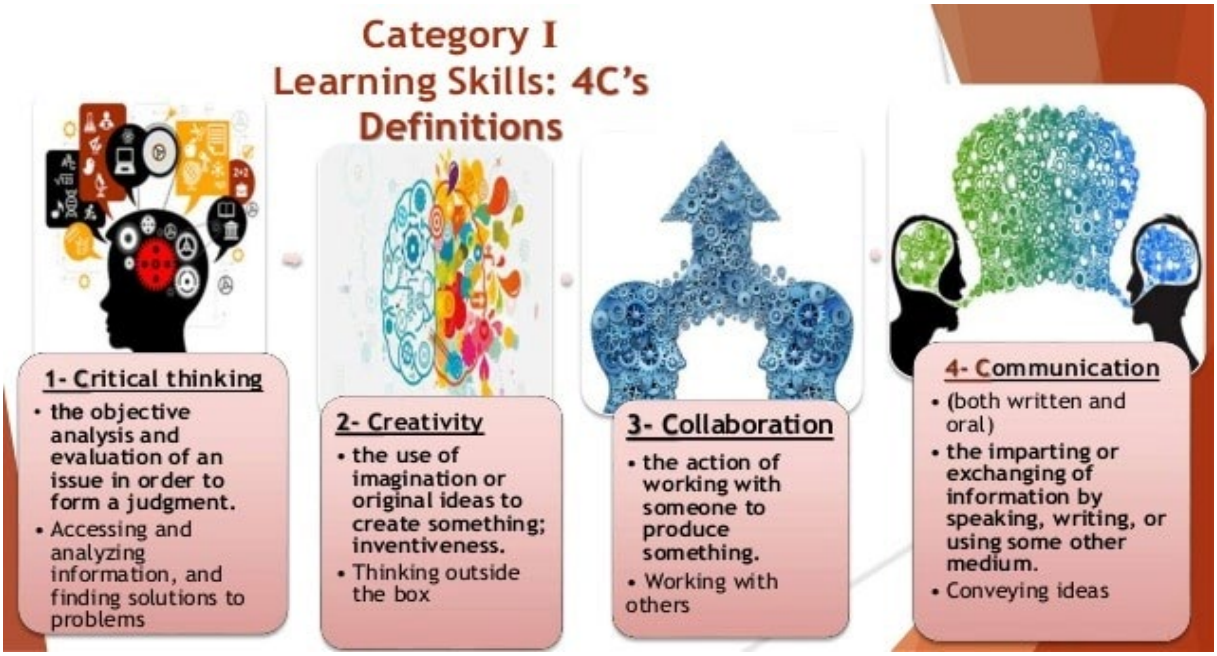
An easy way to understand and remember the classification is



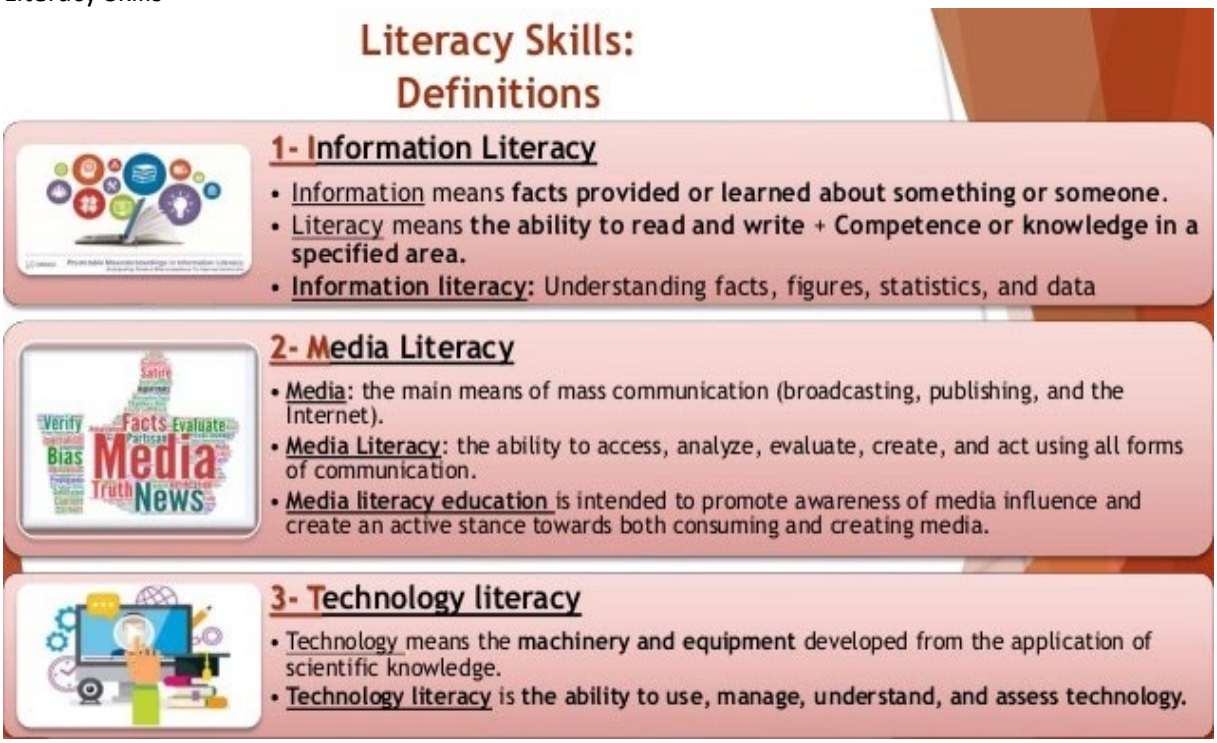
4Cs: Critical Thinking, Creativity & Innovation, Collaboration, Communication

- IMT: Information Literacy, Media Literacy, Technology Literacy
- FLIPS: Flexibility and Adaptability, Leadership and Responsibility, Initiative and Self-Direction, Social and Cross-Cultural Interaction

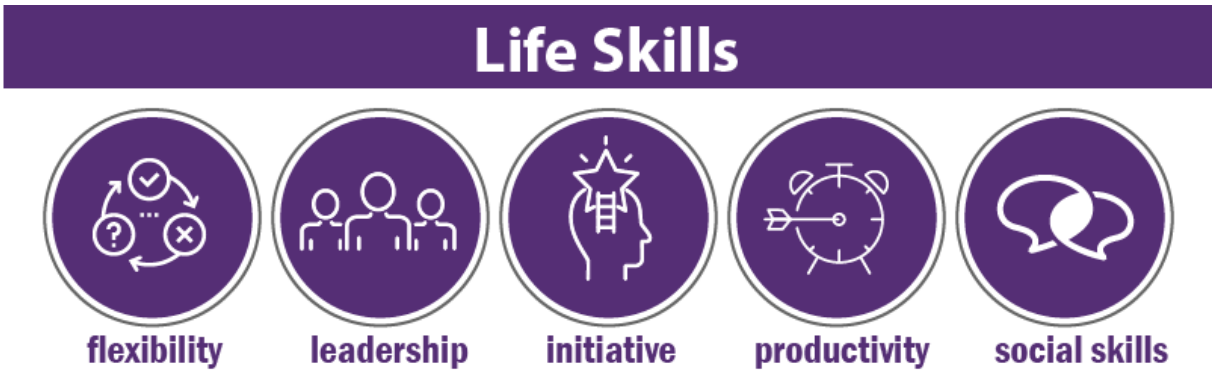
Learning skills



Literacy Skills



Life Skills



- **Flexibility**: Deviating from plans as needed. Flexibility is the expression of someone's ability to adapt to changing circumstances.
- **Leadership**: Motivating a team to accomplish a goal. Leadership is someone's penchant for setting goals, walking a team through the steps required, and achieving those goals collaboratively.
- **Initiative**: Starting projects, strategies, and plans on one's own.
- **Productivity**: Maintaining efficiency in an age of distractions
- **Social skills**: Meeting and networking with others for mutual benefit

The European Reference Framework for Key Competences for Lifelong Learning sets the context for the development of key competences for lifelong learning.
The Recommendation for Key Competences for Lifelong Learning was first adopted by the European Parliament and the Council in 2006.
A revised framework was proposed and adopted in 2018.
It encourages Member States to better prepare people for changing labour markets and active citizenship in more diverse, mobile, digital and global societies, and to develop learning at all stages of life (ibid., p.4).
Learners need to develop their skills and competences throughout their lives, for their personal fulfilment, so that they can actively engage with the society in which they live and to ensure that they are prepared for a constantly changing world of work.

The recommendation calls especially for investing in basic skills, in entrepreneurial and digital competences as well as in language competences to enable everyone to participate actively in society and the economy.
It also emphasises the need for investment in science, technology, engineering and mathematics (STEM) competences to nurture scientific understanding and to increase the attractiveness to follow a career in STEM.
There is no one model followed for integrating the key competences into national curricula. Some countries have introduced them as part of national curriculum reform initiatives and have used those opportunities to ensure that the key competences are threaded through the curriculum.
They are often introduced through cross-curricular approaches rather than being presented as separate subjects.
While the development of key competences prepares young people for a rapidly changing world of work in the future, it also helps them to think critically and creatively, to work independently and as part of a team, to be innovative and to develop learning skills that are

important for them as they travel through their school journey and later along the road of lifelong learning.

Eight key competences adopted in 2006
Key competences are those competences all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment.
The Recommendation defines competences as a **combination of knowledge, skills and attitudes.**
It sets out eight key competences:

- ♣ Communication in the mother tongue;
- ♣ Communication in foreign languages;
- ♣ Mathematical competence and basic competences in science and technology;
- ♣ Digital competence;
- ♣ Learning to learn;
- ♣ Social and civic competences;
- ♣ Sense of initiative and entrepreneurship; and
- ♣ Cultural awareness and expression.

The Reference Framework (2018) sets out eight key competences:
1) Literacy competence;
2) Multilingual competence;
3) Mathematical competence and competence in science, technology and engineering;
4) Digital competence;
5) Personal, social and learning to learn competence;
6) Civic competence;
7) Entrepreneurship competence;
8) Cultural awareness and expression competence.

Competences are defined by the European Commission **(2018b, p.1**) as a combination of knowledge, skills and attitudes appropriate to the context, and where:

a) *knowledge is composed of the facts and figures, concepts, ideas and theories which are already established and support the understanding of a certain area or subject;*

b) skills are defined as the ability and capacity to carry out processes and use the existing knowledge to achieve results;
c) attitudes describe the disposition and mind-sets to act or react to ideas, persons or situations.
The key competences are all considered equally important. They overlap and interlock
How the competences are presented and integrated into the curriculum, and in teaching and learning in schools, depends on the approach taken in different contexts.

21ST CENTURY SKILLS

WAYS OF THINKING

1. Creativity and Innovation
   - Think creatively
   - Work creatively with others
   - Implement innovations
2. Critical Thinking, Problem Solving and Decision Making
   - Reason effectively and evaluate evidence
   - Solve problems
   - Articulate findings
3. Learning to Learn and Metacognition
   - Self-motivation
   - Positive appreciation of learning
   - Adaptability and flexibility

WAYS OF WORKING

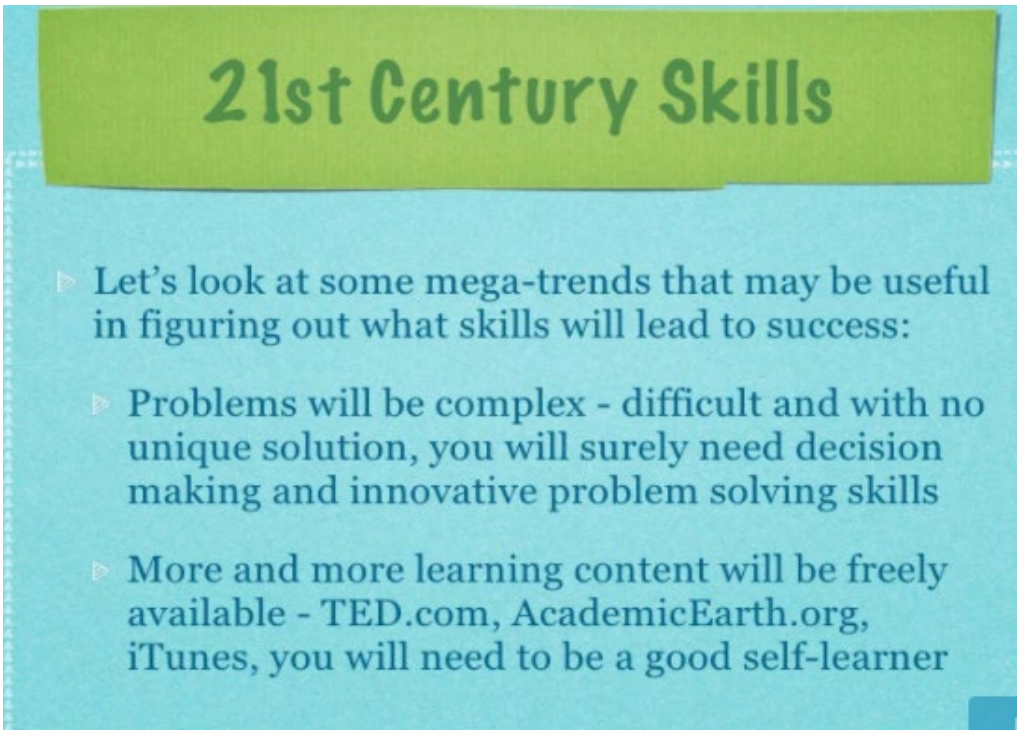
1. Communication
   - Competency in written and oral language
   - Open minded and preparedness to listen
   - Sensitivity to cultural differences when communicating
2. Collaboration and Teamwork
   - Interact effectively with others
   - Work effectively in diverse teams
   - Prioritises, plan and manage projects

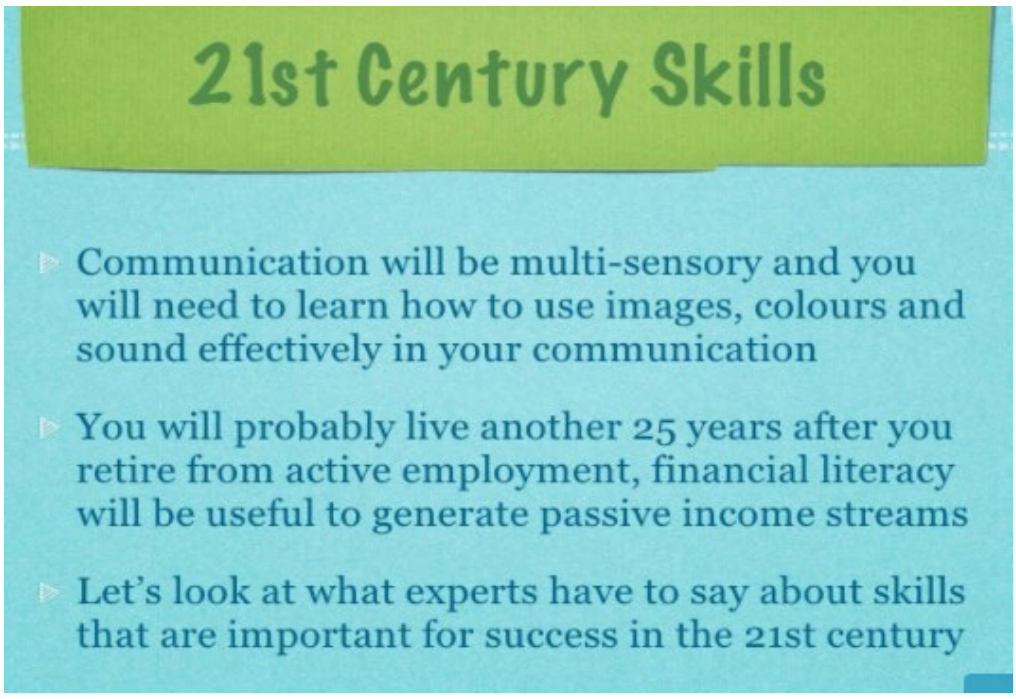
TOOLS FOR WORKING

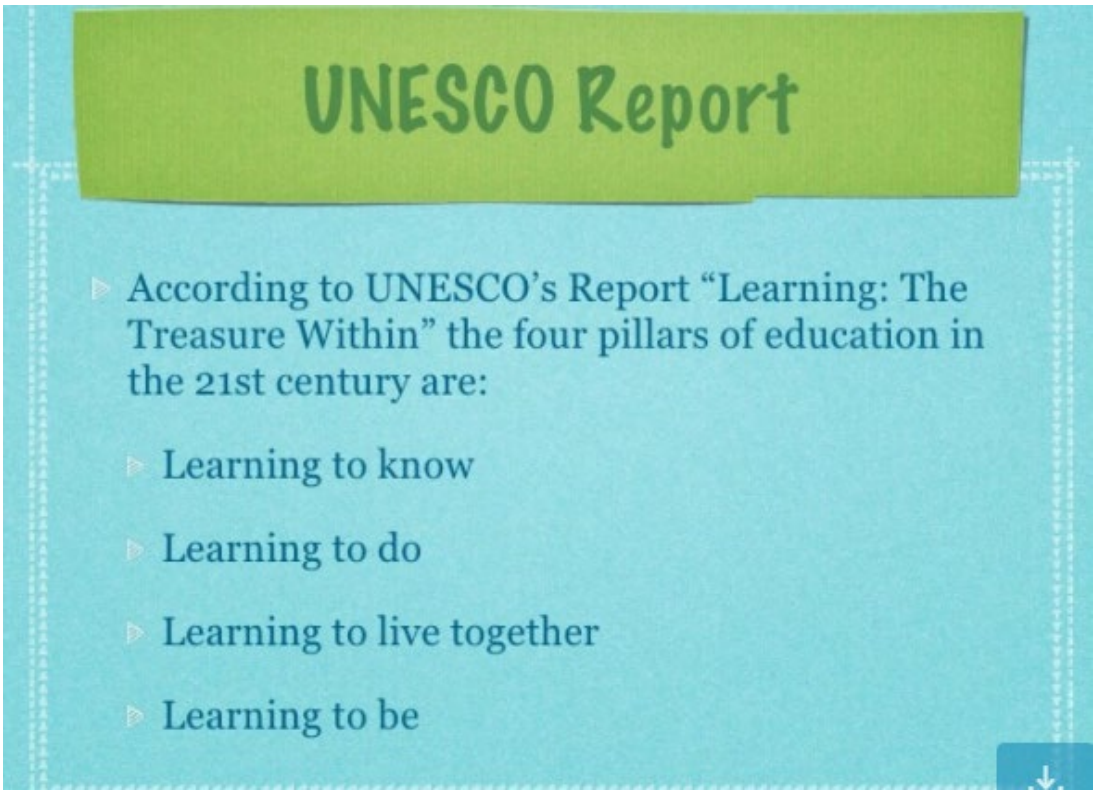
1. Information Literacy
   - Access and evaluate information
   - Use and manage information
   - Apply technology effectively
2. ICT Literacy
   - Open to new ideas, information, tools and ways of thinking
   - Use ICT accurately , creatively, ethically and legally
   - Be aware of cultural and social differences
   - Apply technology appropriately and effectively

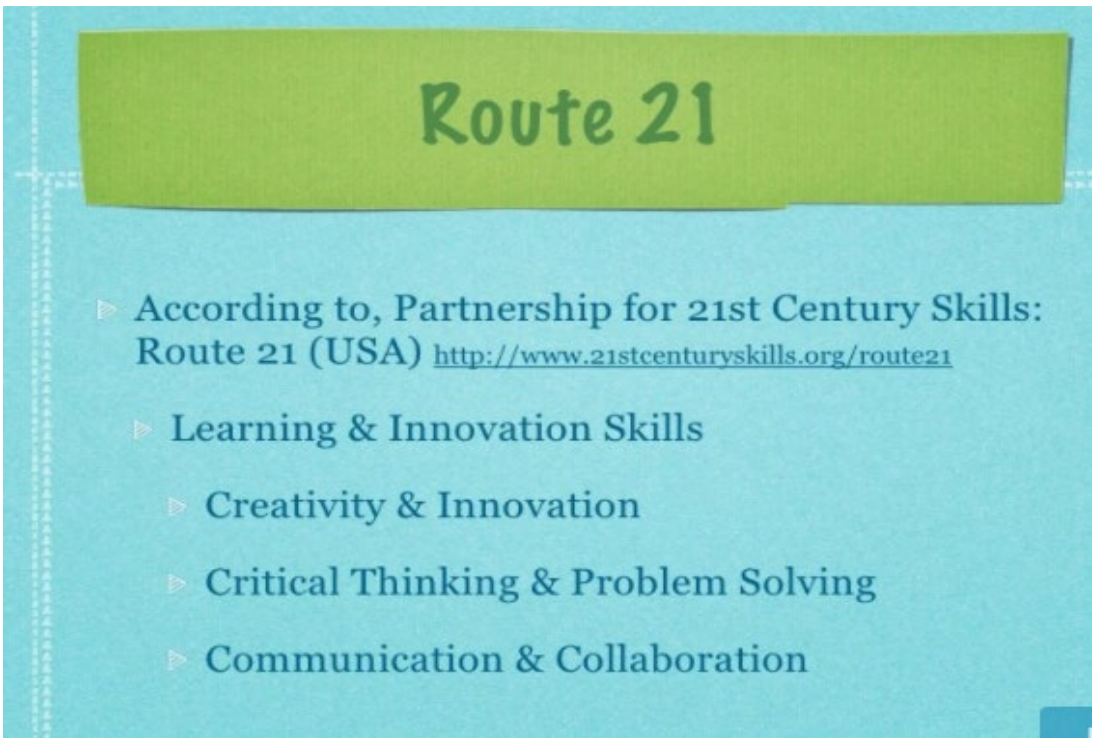
LIVING IN THE WORLD

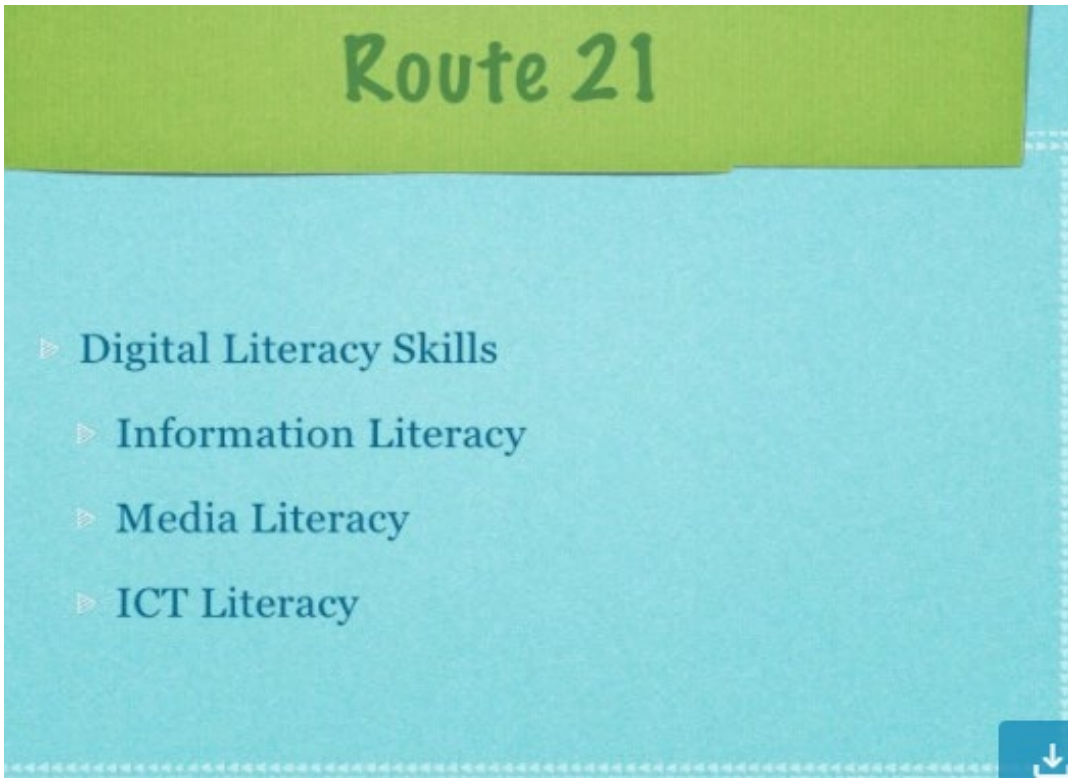
1. Citizenship – global and local
   - Awareness and understanding of rights and responsibilities as a global citizen
   - Preparedness to participate in community activities
   - Respect the values and privacy of others
2. Personal and Social Responsibility
   - Communicate constructively in different social situations
   - Understand different viewpoints and perspectives
3. Life and Career
   - Adapt to change
   - Manage goals and time
   - Be a self-directed learner
   - Interact effectively with others

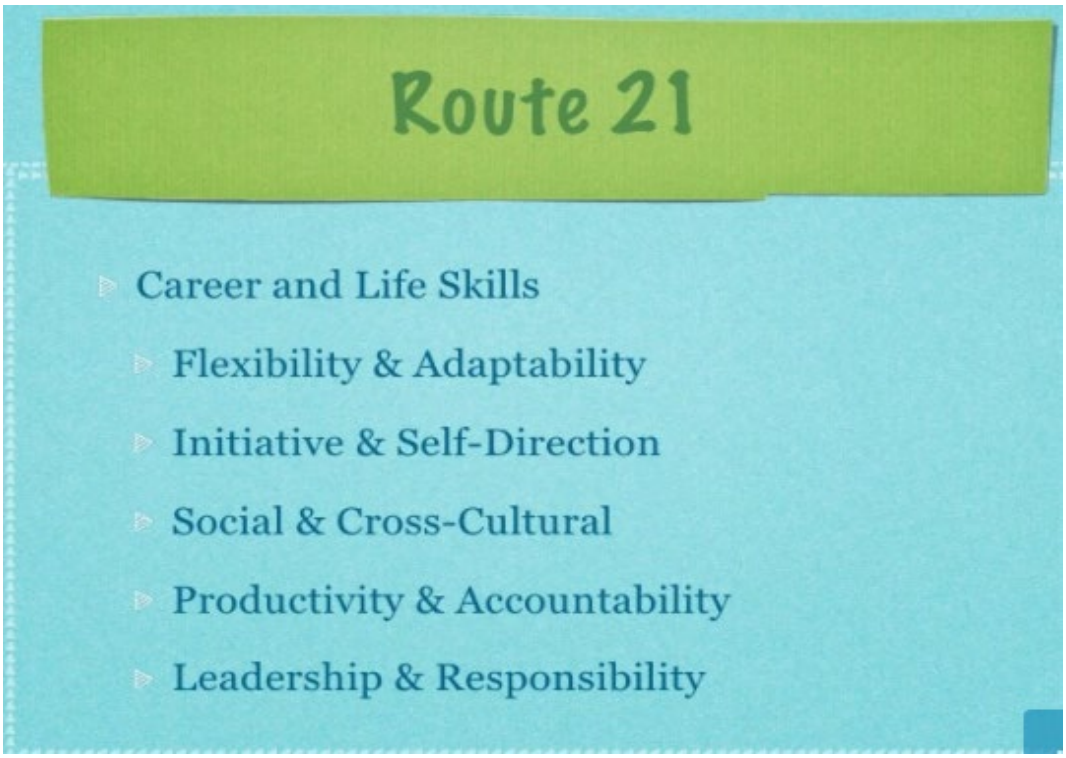

21st Century Skills
Let's look at some mega-trends that may be useful in figuring out what skills will lead to success:
Problems will be complex - difficult and with no unique solution, you will surely need decision making and innovative problem solving skills
More and more learning content will be freely available - TED.com, AcademicEarth.org, iTunes, you will need to be a good self-learner

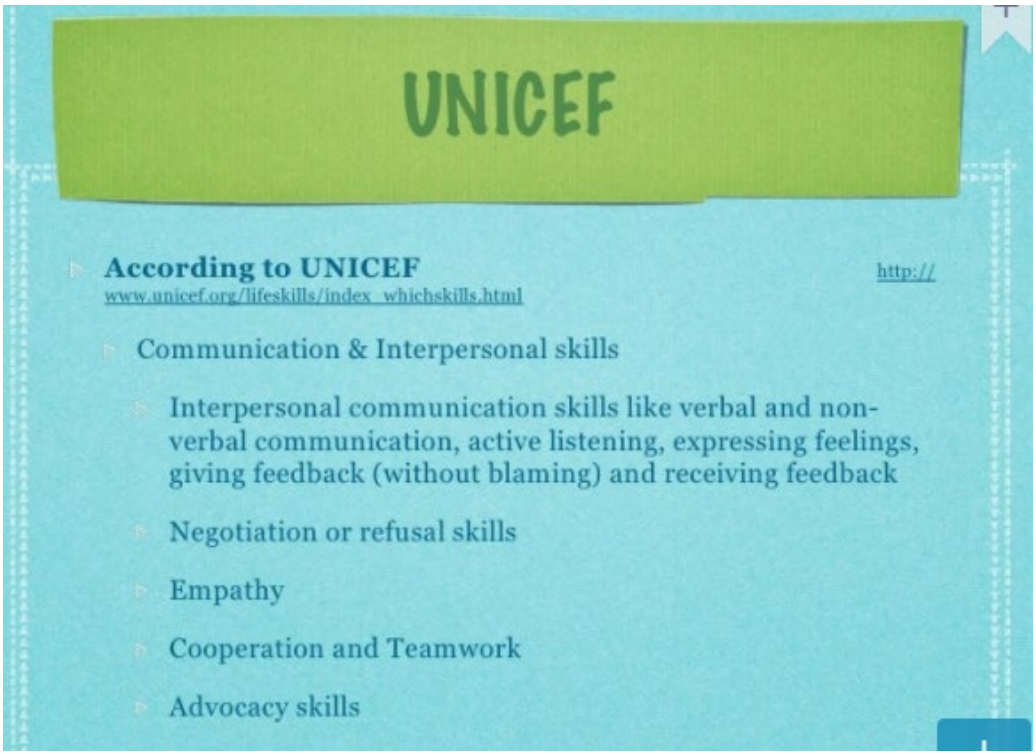

21st Century Skills
Communication will be multi-sensory and you will need to learn how to use images, colours and sound effectively in your communication
You will probably live another 25 years after you retire from active employment, financial literacy will be useful to generate passive income streams
Let's look at what experts have to say about skills that are important for success in the 21st century

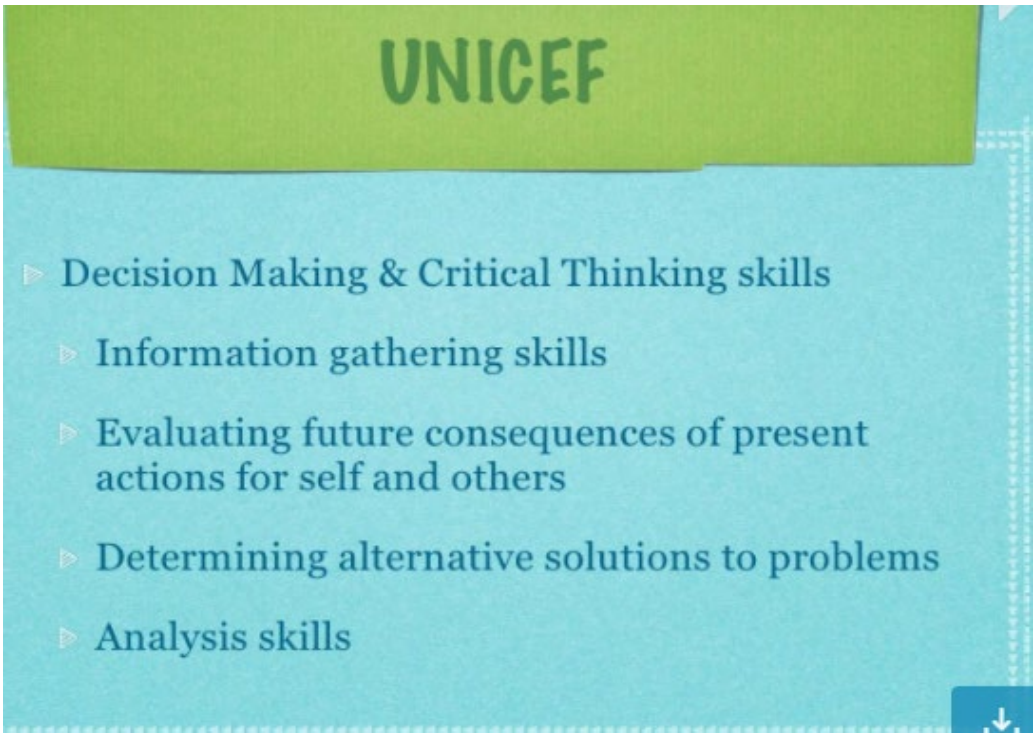

UNESCO Report
According to UNESCO's Report "Learning: The Treasure Within" the four pillars of education in the 21st century are:
Learning to know
Learning to do
Learning to live together
Learning to be

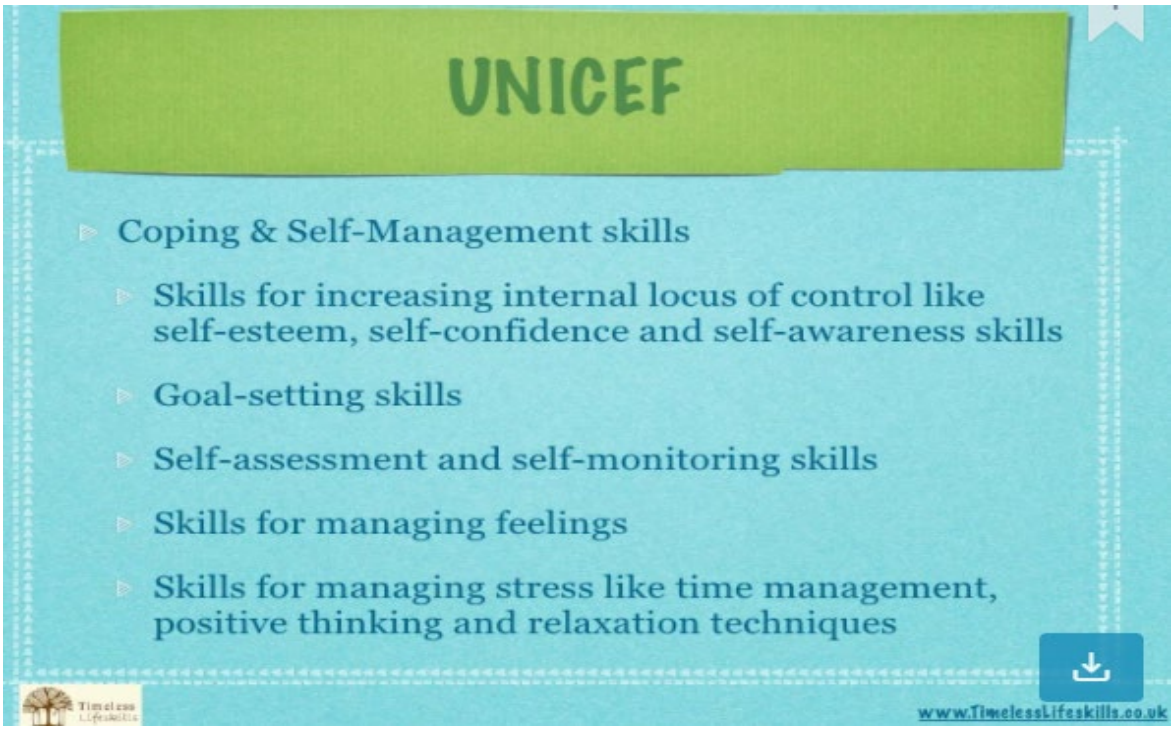

Route 21
According to, Partnership for 21st Century Skills: Route 21 (USA) http://www.21stcenturyskills.org/route21
Learning & Innovation Skills
Creativity & Innovation
Critical Thinking & Problem Solving
Communication & Collaboration


Route 21
Digital Literacy Skills
Information Literacy
Media Literacy
ICT Literacy


Route 21
Career and Life Skills
Flexibility & Adaptability
Initiative & Self-Direction
Social & Cross-Cultural
Productivity & Accountability
Leadership & Responsibility


UNICEF
According to UNICEF
http://
www.unicef.org/lifeskills/index_whichskills.html
Communication & Interpersonal skills
Interpersonal communication skills like verbal and non-verbal communication, active listening, expressing feelings, giving feedback (without blaming) and receiving feedback
Negotiation or refusal skills
Empathy
Cooperation and Teamwork
Advocacy skills


UNICEF
Decision Making & Critical Thinking skills
Information gathering skills
Evaluating future consequences of present actions for self and others
Determining alternative solutions to problems
Analysis skills



Skills tests

- https://www.123test.com/career-test/
- https://www.123test.com/personality-test/
- https://www.123test.com/team-roles-test/
- https://www.schooleducationgateway.eu/en/pub/latest/news/key-competence-development.htm

What are the characteristics of teaching and learning in the 21st century?

7 Characteristics of 21st Century Education

- Personalized Learning. A personalized approach recognizes that not all students learn in the same manner. ...
- Equity, Diversity and Inclusivity. ...
- Learning through Doing. ...
- Rethinking Learner and Teacher Roles. ...
- Community Relationships. ...
- Technology. ...
- Teacher Professionalization.

Traditional Learner	21st Century Learner
• Sit and get	• Move, experiment
• Learner as receptor	• Learner as initiator
• Expectations same for all	• Student navigates choices
• Product oriented	• Process & product oriented
• Teacher tells	• Student constructs meaning
• Paper/pencil driven	• Technology enhanced learning; multi media driven
• Explicit directions	• No limits
• Isolated learning; private	• Shared globally; collaborates
• Compliant	• Problem solver
• Answers are primary	• Questions are primary
• Closed system	• Open system
• Stayed the same	• Changes constantly
• Knows facts	• Inquirer
• There is a right way	• No right way
• Wait for results	• Immediate gratification By Facebook/LikeToWrite

DIFFERENCES BETWEEN 20TH CENTURY AND 21ST CENTURY TEACHING AND LEARNING EXPERIENCE.

20TH CENTURY	21ST CENTURY
Teacher –directed	Learner-centered
Direct instruction	Collaborative instruction
Knowledge	Skills
Content	Process
Theory	Practice
Curriculum	Life skills
Individual	Group
Classroom	Global Community
Summative Assessments	Formative Evaluation
Learning for school	Learning for Life
Competitive	Collaborative
Text based	Web Based

The 21st Century teacher…

The teacher	Teachers are life-long learners, facilitators, innovators, often learn about digital tools from students!
Learners	Learners are now creators, producers, publishers, collaborators,
Lessons	They can collaborate and learn about other countries and people first hand
Student work	Students can produce a variety of digital content, creative blogs, movies, or digital stories that they feel proud of and share with others.
Discipline	Classroom management for the blended classroom comes into effect
Diversity	No need to "spoon-feed" the knowledge or teach "one-size fits all" content.
Media	With instant access to the Internet a large variety of media is available for information

5 Ways to Prepare Your Students for the 21st Century

1. Let Your Students Lead The Learning

Learning takes place best in environments where students feel empowered to learn. Effective teachers are more like moderators, offering inspiration and guiding students to discover for themselves. Give students the opportunity to be self-learners, which guarantees lifelong learning. This brings us directly to the second point.

2. Create an Inquiry-Based Classroom Environment

If students are to lead the way to learning, they need to be able to ask questions – and then find the means to answer them. Students (and teachers) need to "wonder out loud" as they encounter new information.

A KWL chart (What do you **K**now? What do you **W**ant to know? What have you **L**earned?) can guide students toward true self-motivated learning.

3. Encourage Collaboration

"*We are greater than the sum of our parts.*" Herein is the heart of collaboration.

A healthy, active classroom is a sharing classroom.

Students are social beings, and even more so in a language class.

Find every opportunity to allow students to form pairs and small groups.

Not only does this encourage the development of speaking and listening skills, but it also teaches students how to effectively achieve goals together.

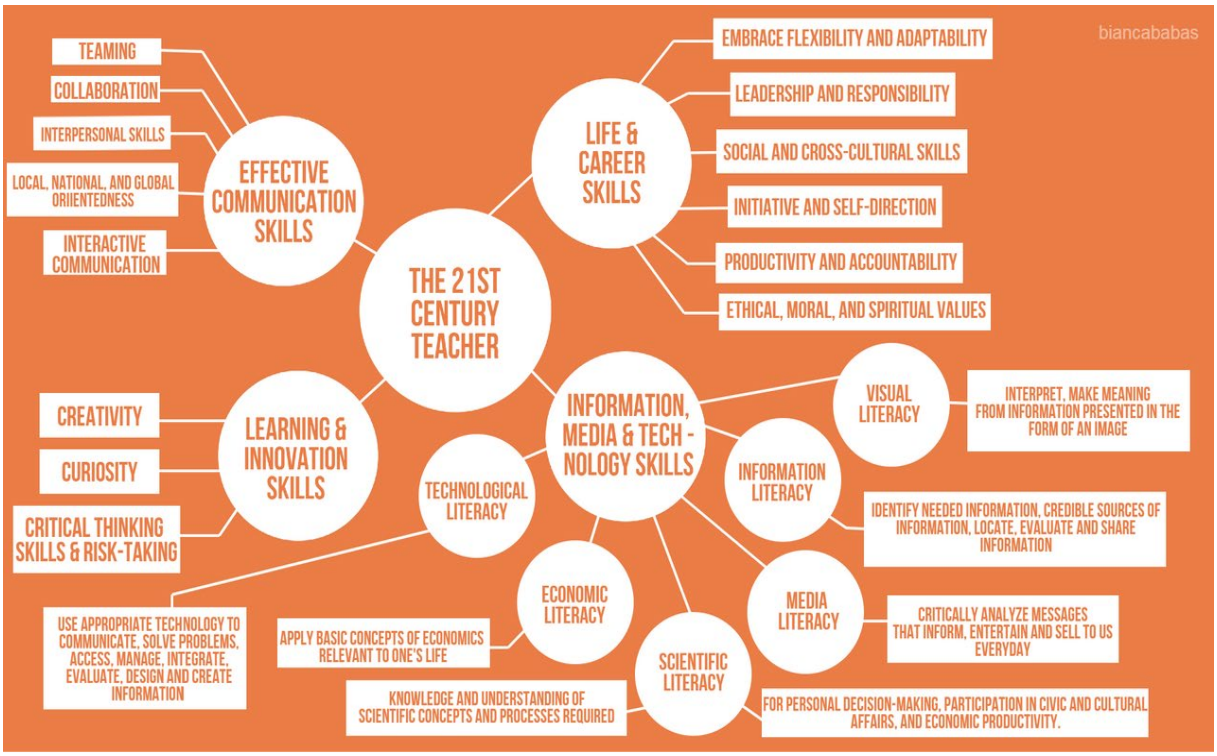
4. Develop Critical Thinking Skills

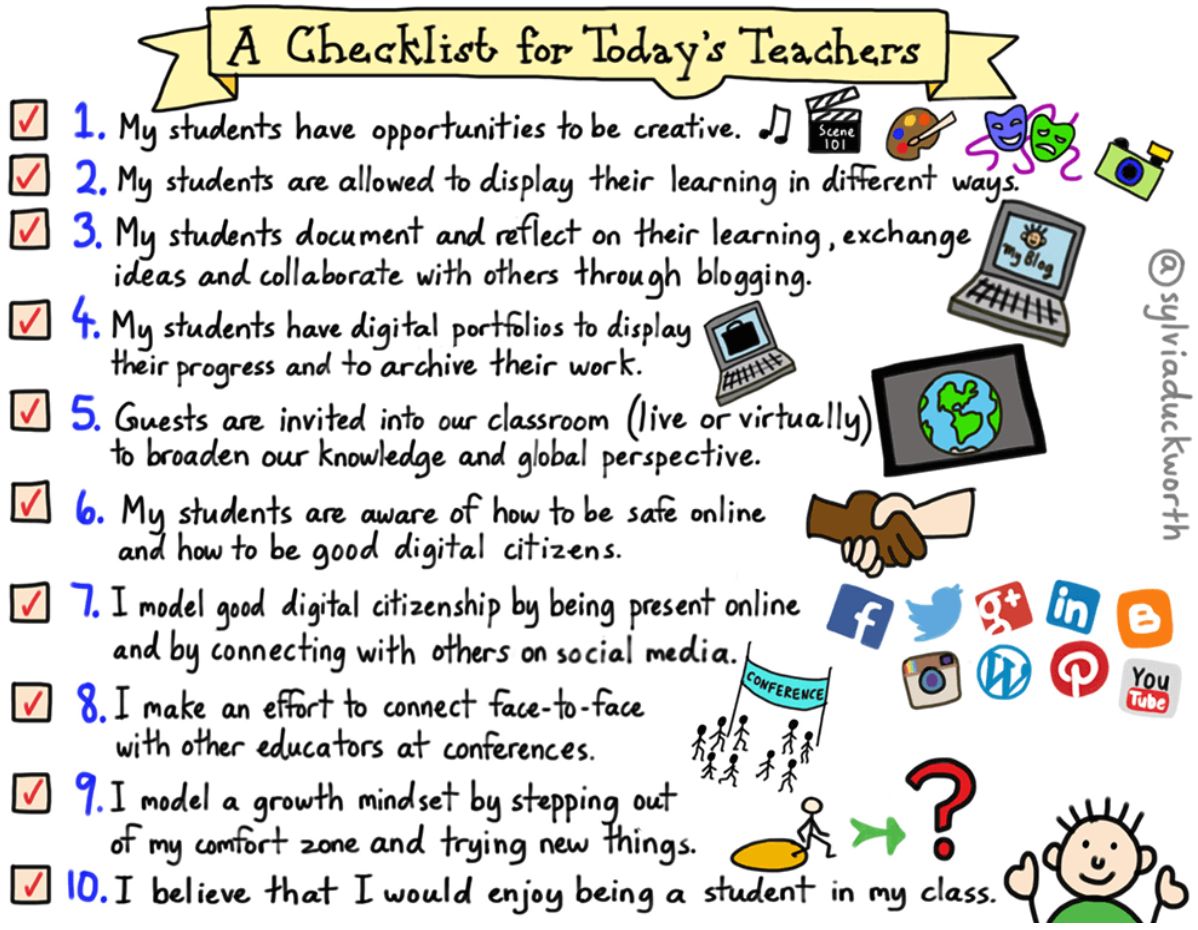
Learning is more than memorizing and remembering.

Critical thinking skills take students well beyond simple comprehension of information. Students use these skills to solve problems in new situations, make inferences and generalizations, combine information in new patterns, and make judgments based on evidence and criteria. Introduce activities in your lessons that build critical thinking skills along with language skills.

5. Encourage Creativity

Encourage your students to be creative throughout each lesson. Creative activities allow students to express what they've learned in a new way. This synthesizing and personalizing of knowledge consolidates learning, and creates an experience that remains with students long after the class is over.


biancababas
THE 21ST CENTURY TEACHER
EFFECTIVE COMMUNICATION SKILLS
TEAMING
COLLABORATION
INTERPERSONAL SKILLS
LOCAL, NATIONAL, AND GLOBAL ORIENTEDNESS
INTERACTIVE COMMUNICATION
LIFE & CAREER SKILLS
EMBRACE FLEXIBILITY AND ADAPTABILITY
LEADERSHIP AND RESPONSIBILITY
SOCIAL AND CROSS-CULTURAL SKILLS
INITIATIVE AND SELF-DIRECTION
PRODUCTIVITY AND ACCOUNTABILITY
ETHICAL, MORAL, AND SPIRITUAL VALUES
LEARNING & INNOVATION SKILLS
CREATIVITY
CURIOSITY
CRITICAL THINKING SKILLS & RISK-TAKING
INFORMATION, MEDIA & TECH - NOLOGY SKILLS
VISUAL LITERACY
INTERPRET, MAKE MEANING FROM INFORMATION PRESENTED IN THE FORM OF AN IMAGE
INFORMATION LITERACY
IDENTIFY NEEDED INFORMATION, CREDIBLE SOURCES OF INFORMATION, LOCATE, EVALUATE AND SHARE INFORMATION
MEDIA LITERACY
CRITICALLY ANALYZE MESSAGES THAT INFORM, ENTERTAIN AND SELL TO US EVERYDAY
TECHNOLOGICAL LITERACY
USE APPROPRIATE TECHNOLOGY TO COMMUNICATE, SOLVE PROBLEMS, ACCESS, MANAGE, INTEGRATE, EVALUATE, DESIGN AND CREATE INFORMATION
ECONOMIC LITERACY
APPLY BASIC CONCEPTS OF ECONOMICS RELEVANT TO ONE'S LIFE
SCIENTIFIC LITERACY
KNOWLEDGE AND UNDERSTANDING OF SCIENTIFIC CONCEPTS AND PROCESSES REQUIRED
FOR PERSONAL DECISION-MAKING, PARTICIPATION IN CIVIC AND CULTURAL AFFAIRS, AND ECONOMIC PRODUCTIVITY.


A Checklist for Today's Teachers
1. My students have opportunities to be creative.
2. My students are allowed to display their learning in different ways.
3. My students document and reflect on their learning, exchange ideas and collaborate with others through blogging.
4. My students have digital portfolios to display their progress and to archive their work.
5. Guests are invited into our classroom (live or virtually) to broaden our knowledge and global perspective.
6. My students are aware of how to be safe online and how to be good digital citizens.
7. I model good digital citizenship by being present online and by connecting with others on social media.
8. I make an effort to connect face-to-face with other educators at conferences.
9. I model a growth mindset by stepping out of my comfort zone and trying new things.
10. I believe that I would enjoy being a student in my class.
Scene 101
My Blog
CONFERENCE
You Tube
@sylviaduckworth

3. Augmented Reality, general presentation, software presentation, hardware, applications, Examples

What is augmented reality (AR)? https://www.techtarget.com/whatis/definition/augmented-reality-AR

Augmented reality (AR) is the integration of digital information with the user's environment in real time. Unlike virtual reality (VR), which creates a totally artificial environment, AR users experience a real-world environment with generated perceptual information overlaid on top of it.

Augmented reality is used to either visually change natural environments in some way or to provide additional information to users. The primary benefit of AR is that it manages to blend digital and three-dimensional (3D) components with an individual's perception of the real world. AR has a variety of uses, from helping in decision-making to entertainment.

AR delivers visual elements, sound and other sensory information to the user through a device like a smartphone or glasses. This information is overlaid onto the device to create an interwoven experience where digital information alters the user's perception of the real world. The overlaid information can be added to an environment or mask part of the natural environment.

How does augmented reality work?

Augmented reality can be delivered in a variety of formats, including within smartphones, tablets and glasses. AR delivered through contact lenses is also being developed. The technology requires hardware components, such as a processor, sensors, a display and input devices. Mobile devices already typically have this hardware available, with sensors including cameras, accelerometers, Global Positioning System (GPS) and solid-state compasses. This helps make AR more accessible to the everyday user. A GPS is used to pinpoint the user's location, and its compass is used to detect device orientation, for example.

Differences between AR and VR

VR is a virtual environment created with software and presented to users in such a way that their brain suspends belief long enough to accept a virtual world as a real environment. Virtual reality is primarily experienced through a headset with sight and sound.

The biggest difference between AR and VR is that augmented reality uses the existing real-world environment and puts virtual information on top of it, whereas VR completely immerses users in a virtually rendered environment. While VR puts the user in a new, simulated environment, AR places the user in a sort of mixed reality.

Quote of university Bochum (BLOG 4.4.2019): https://elearning.blogs.ruhr-uni-bochum.de/escouts-augmented-learning-aktives-lernen-mit-augmented-reality/With **Augmented Reality** (AR), the real, physical world is expanded and enriched with digital objects (graphics, videos, texts, audio files, computer-generated images and animations). **Augmented Reality applications** are available as smartphone apps and these can also be used without accessories, such as B. Virtual Reality glasses, usable.

This technology offers great didactic potential for teaching. Augmented Learning (AL) is the targeted digital expansion of real rooms and objects for teaching and learning purposes. AL offers teachers the opportunity to visualize content in real space and make it tangible. This creates a new approach to subject complexes that can enable authentic learning. Sequences, processes and situations can be trained realistically in simulations.

AR in Education, you can transform virtual a lot of objects into classroom. E.g. Animals, bodies, Houses, other objects.

https://elearningindustry.com/augmented-reality-in-education-staggering-insight-into-future

in Teaching history, or architecture you can implement virtual objects like a complete building, furniture, plants and all other around. It will enable students to learn faster and memorize information.

4. Augmented Reality Usage Prevalence in European Union Countries

We as Trainer and training provider are forced to search innovative solutions to implement in our daily teaching.

https://www.elearninglearning.com/augmented-reality/

Top AR use cases

AR can be used in the following ways:

- **Retail.** Consumers can use a store's online app to see how products, such as furniture, will look in their own homes before buying.
- **Entertainment and gaming.** AR can be used to overlay a virtual game in the real world or enable users to animate their faces in different and creative ways on social media.

- **Navigation.** AR can be used to overlay a route to the user's destination over a live view of a road. AR used for navigation can also display information about local businesses in the user's immediate surroundings.
- **Tools and measurement.** Mobile devices can use AR to measure different 3D points in the user's environment.
- **Architecture.** AR can help architects visualize a building project.
- **Military.** Data can be displayed on a vehicle's windshield that indicates destination directions, distances, weather and road conditions.
- **Archaeology.** AR has aided archaeological research by helping archeologists reconstruct sites. 3D models help museum visitors and future archeologists experience an excavation site as if they were there.

Examples of AR

Examples of AR include the following:

- **Target app.** The Target retail app feature called See it in Your Space enables users to take a photo of a space in their home and digitally view an object, like a picture on the wall or a chair, to see how it will look there.
- **Apple Measure app.** The Measure app on Apple iOS acts like a tape measure by enabling users to select two or more points in their environment and measure the distance between them.
- **Snapchat.** Snapchat filters use AR to overlay a filter or mask over the user's Snap or picture.
- **Pokemon Go.** Pokemon Go is a popular mobile AR game that uses the player's GPS to detect where Pokemon creatures appear in the user's surrounding environment for them to catch.
- **Google Glass.** Google Glass is Google's first commercial attempt at a glasses-based AR system. This small wearable computer enables users to work hands-free. Companies such as DHL and DB Schenker use Google Glass and third-party software to enable frontline workers to be more efficient when it comes to global supply chain logistics and customized shipping. Google is also working on another pair of glasses in 2022 that's

designed to overlay a live transcription or translation of what another person says in text.

Augmented Reality Applications

(https://www.softwaretestinghelp.com/what-is-augmented-reality/#Augmented_Reality_Applications)

Application	Description/explanation
Gaming	AR allows for better gaming experiences as gaming grounds are being moved from virtual spheres to include real-life experiences where players can perform real-life activities to play.
Retail and Advertisement	AR can improve customer experiences by presenting customers with 3D models of products and helping them make better choices by giving them virtual walkthroughs of products such as in a real estate. It can be used to lead customers to virtual stores and rooms. Customers can overlay the 3D items on their spaces such as when buying furniture to select items best suitable to match their spaces – regarding size, shape, color, and type. In advertising, ads can be included in AR content to help companies popularize their content to viewers.
Manufacturing and Maintenance	In maintenance, repair technicians can be directed remotely by professionals to do repairs and maintenance works while on the ground using AR apps without having the professionals travel on the location. This can be useful in places where it is hard to travel to the location.
Education	AR interactive models are used for training and learning.
Military	AR assists in advanced navigation and to help mark objects in real-time.
Tourism	AR, in addition to placing ads on AR content, can be used for navigation, providing data on destinations, directions, and sightseeing.

Application	Description/explanation
Medicine/Healthcare	AR can help train healthcare workers remotely, help in monitoring health situations, and for diagnosing patients.

AR Example In Real Life

- Elements 4D is a chemistry learning application that employs AR to make chemistry more fun and engaging. With it, students make paper cubes from the element blocks and place them in front of their AR cameras on their devices. They can then see representations of their chemical elements, names, and atomic weights. Students can bring together the cubes to see if they react and to see chemical reactions.

[image source]

- Google Expeditions, where Google uses cardboards, already allows the students from across the world to do virtual tours for history, religion, and geography studies.
- Human Anatomy Atlas lets students explore over 10,000 3D human body models in seven languages, to let students learn the parts, how they work, and to improve their knowledge.
- Touch Surgery simulates surgery practice. In partnership with DAQRI, an AR company, medical institutions can see their students practicing surgery on virtual patients.
- IKEA Mobile App is famous in real estate and home product walkthroughs and testing. Other apps include Nintendo's Pokemon Go App for gaming.

5. Demonstration of AR applications in learning phases

How does Augmented Reality work in eLearning?

> https://www.elearninglearning.com/augmented-reality/?open-article-id=16330673&article-title=how-does-augmented-reality-work-in-elearning-&blog-domain=wizcabin.com&blog-title=wizcabin-

Top Tools to Build Augmented Reality Apps.

https://www.infoq.com/articles/augmented-reality-best-skds/

https://program-ace.com/blog/augmented-reality-sdk/

Here are top tools listed and described for development of AR

6. Creating AR Content Theoretical and Practical

Top Tools to Build Augmented Reality Apps. Here are top tools listed and described for development of AR

https://www.infoq.com/articles/augmented-reality-best-skds/

https://program-ace.com/blog/augmented-reality-sdk/

7. Interdisciplinary promotion with Augmented Reality

Location: Berlin Best Practise Examples Virtual and/or Augmented reality

https://www.visitberlin.de/de/suche?keys=augmented

Historic excursion https://www.berliner-mauer-gedenkstaette.de/de/cold-war-berlin-2069.html

Please click her on Google Play or App Store to install the app. Using this App in Teaching example

https://www.berliner-mauer-gedenkstaette.de/en/

Here is reading material for students (actual only in German available) to download, photo and video material for history linked with **Augmented Reality-App zur Panzerkonfrontation am Checkpoint**

Charlie 1961.

Call APP Cold WAR Berlin

change language to English

Example german: https://www.berliner-mauer-gedenkstaette.de/de/uploads/cold_war_berlin_unterricht/anleitung_unterrichtsmaterial.pdf

HOW IT WORKS

For AR Work you need a stable internet connection and stable ground. You have to agree camera access of you smartphone and search a large area on the ground. Please READ THE INSTRUCTION.

A Pool of historic photos, movies, radio or 3D Models is waiting you.

Location TV tower of Berlin
https://www.visitberlin.de/en/event/berlin-fernsehturm

A new app has also been launched that allows visitors to explore the city even better from the tower with the help of **Augmented reality**.

Install Magnicity APP in App or Play Store

Without to visit Berlin, we can see in virtual reality, let's see what is more impressive? If you feel on wrong place, we can change virtual to Paris, Rotterdam, Chicago.

More Tips for Berlin **(virtual reality)**:

https://www.visitberlin.de/en/blog/11-tips-virtual-reality-experiences-berlin

https://www.visitberlin.de/en/exit-vr

Solve the puzzle

Let#s go to the wall, using MauAR APP (only iPhone)

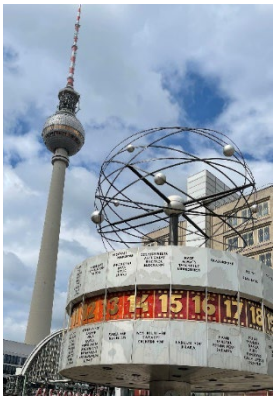
The WALL in Berlin, Mühlenstraße 70-71 10243 Berlin

https://www.visitberlin.de/de/east-side-gallery

You want to stay in prison? https://www.visitberlin.de/en/blog/11-tips-virtual-reality-experiences-berlin

https://www.youtube.com/watch?v=ZKP54B0yu3M Welcome in prison!

Brandenburg GATE https://www.visitberlin.de/en/brandenburg-gate



LAST PAGE

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