#5 Policy Paper on 21st Century Skills (21CS)

The Palestinian Authority with support from the Belgian Development Cooperation implemented from 2011 till 2015 the project "E-learning Curriculum in Primary and Secondary Education" in several hundred Palestinian schools. The aim of the project was to utilize ICTs in school education in order to enhance student-centred learning and stimulate 21st Century Skills in Palestine.

An Intervention Action Research was conducted in 2014-15 with the main aim to provide upstream policy advice to the Ministry of Education and Higher Education towards improving and advancing E-learning resources and practices for teachers, students and families. The Action Research was assigned to a consortium of the Open University of Cyprus and the Al-Quds Open University which produced the following Policy Papers:

0. Policy Paper on Information and Communication Technology in Education (ICTE)
1. Policy Paper on School-led Initiatives (SLI)
2. Policy Paper on Digital Educational Resources (DER)
3. Policy Paper on mobile Learning (m-L)
4. Policy Paper on Teacher Professional Learning (TPL)
5. **Policy Paper on 21st Century Skills (21CS)**

The policy papers are based on a "Most Significant Change" study from over a hundred school communities (teachers, students, headmasters, parents, administrators) that participated in the e-Learning project, on two 4-month long Action Research projects in two sets of ten schools, on extensive discussions and feedback from supervisors and MoEHE staff, and detailed review by the staff from the Belgian Development Agency. A two-day seminar was held by MoEHE in April 2015 in Jericho in which initial versions of the papers were presented and reviewed by policy makers and practitioners. Thus, although the authors of the papers have full responsibility, they cannot take full credit. In December 2015 the results were presented and discussed publicly in Ramallah.

Each policy paper includes a subject definition, followed by objectives of the policy under discussion, continuing with policy issues, questions and decisions to be made; related challenges, risks and opportunities are outlined and the relation to the curriculum is highlighted, concluding with Policy Recommendations. The main detailed part is prefaced by a single-page outline.

The purpose of the six policy papers, to be used in combination, is to provide policy advice to the Palestinian Ministry of Education and Higher Education given its strategy, as specifically expressed:

- *"the shift from teacher to student-centred learning, considering that frontal teaching, lecturing and rote learning are still the predominant methods of teaching in Palestine"* (cf. MoEHE, 2008a, 34; MoEHE, 2008b, 8; PEI, 2009, 14)

- *"… that ICT in education plays an important role as an enabler for promoting pedagogical innovation and developing the quality of teaching and learning. … ICT may be an effective tool for learning or part of a learning environment designed to achieve specific learning objectives, often not related to ICT content"* (Strategic framework of the Palestinian Education Initiative)

- *"… special focus on quality improvement in learning environments and students acquiring the so called 21th Century skills"* (ToR of the Action Research)

This series of Policy Papers was produced in 2015 by a team of educators from the Open University of Cyprus, Al-Quds Open University, the Belgian Development Agency (BTC) and the Ministry of Education and Higher Education of Palestine coordinated by Thanasis Hadzilacos, Professor of Educational Technology at the Open University of Cyprus.

Direct and Indirect Contributors

From the Open University of Cyprus:

Dr. Thanasis Hadzilacos, Dr. Maria Fragkaki, Erato-Ioanna Sarri, Dr. Michalinos Zembylas

From the team of Al-Quds Open University:

Dr. Majdi Zamel, Suaad Abed, Islam Amro, Dr. Khaled Dweikat, Randa Abdel Hay, Mahmoud Hawamdeh, Dr. Mohamed abu Maliq, Saeda Mustafa, Randa Najdi, Dr. Yousef Sabbah

From the team of the e-Learning Project and the Belgian Development Agency (BTC):

Dima Alarqan, Jan De Ceuster, Thierry Foubert, Anne Hendrickx, Dr. Rashid Jayousi, Rana Quttaineh, Ayat Shaheen

From the team of the Palestinian Ministry of Education and Higher Education:

Dr. Basri Saleh, Dr. Shahnaz Far, Dr. Mamoon Jabr, Rabiha Elyan, Dr. Suhair Qasim, Dr. Sofia Rimawi, Dr. Omar Atwan, Hazem Abu Jazar

"Technology can amplify great teaching but cannot replace poor teaching.

Not a magic bullet to improve learning, it can play a role if applied better in the classroom;

of little help in bridging the skills divide between advantaged and disadvantaged."

(From the OECD study, 2015)

ICT for Student-centred Learning and 21st Century Skills (21CS)

This page outlines the policy recommendations for 21st century skills (21CS) development through student-centred instruction and utilization of ICT. 21CS are transversal, across all core subjects, competencies: skills for thinking and learning, for working including digital tools, and for living including ethics and values.

If ICT@E were a voyage, 21st Century Skills would be the compass.

Objectives

1. To reform teaching practices with emphasis on student-centred learning.
2. To reform the curriculum putting emphasis on 21CS.
3. To change attitude towards assessment and use 21SC assessment as a tool for transforming education.

Policy Issues/Questions that must be decided upon

PR 1. **ICT, Digital literacy and 21CS**

PR 2. **Assessment reform**

PR 3. **21CS for Educators**

Challenges, Risks and Opportunities related to 21CS

C1. **Ignorance, misunderstanding and superficiality**

C2. **Risks related to assessment and curriculum reform**

C3. **Resistance to change**

Policy recommendations

PR 1. **Choose 21CS framework and prioritize**

PR 2. **Implement: Long-term, gradually, holistically**

PR 3. **Educate teachers and assess teaching appropriately**

PR 4. **Reform assessment and the curriculum**

PR 5. **Advance a Palestinian version of 21CS**

ICT for Student-centred Learning and 21st Century Skills (21CS)

21st century skills (21CS) are transversal, across all core subjects, and include skills for

- <u>Thinking and learning</u> (Creativity and innovation, critical and contemplative thinking, problem solving, decision-making, learning to learn, metacognition)

- <u>Working, including Tools</u> (Communication/Collaboration/Teamwork, ICT-related skills such as information, media and digital literacy)

- <u>Living, values and ethics</u> (Global citizenship including respect and dialogue, integrity, initiative and self-direction, flexibility and adaptability, productivity, leadership and responsibility)

21CS must be pursued in parallel with and be given equal importance to area-specific and subject-specific skills; they require a profound reform in teaching practices, basic changes to the curriculum and a very different assessment. In contrast to words and plans, the prevailing teaching practices, world-wide including Palestine, do not encourage 21CS development. Student-centred is the instruction designed and executed around the student and not the teacher. Pedagogically correct ICT utilization can greatly help –although by no means guarantees- the development of 21CS in a student-centred instructional environment.

<p align="center">If ICT@E were a voyage, 21st Century Skills would be the compass.</p>

Traditionally teaching practices are teacher-centred: the teacher imparts subject knowledge; the students learn individually and with little initiative. Evaluation is summative, testing the same curriculum goals for all students. This system world-wide has reached its limits. Student-centred learning, a long-term strategic objective of Palestinian education, is a different paradigm and requires a total reform of teaching practices and assessment. Teachers need new knowledge, they need to cultivate and acquire 21CS themselves, and foremost they need new attitudes towards their profession. Although the issue is primarily pedagogical, technologies can play an important role.

Objectives regarding 21CS

1. **Reform teaching practices**

<u>The main objective with respect to 21CS is to reform teaching practices placing emphasis on student-centred learning</u>. A main reason why student-centred learning and 21SC are so difficult to achieve is because they run contrary to some fundamental tenets of traditional school education, especially teaching practices. They also involve greater risk of failing to achieve their goals (see C2 below). Student-centred learning aims to develop learner autonomy and independence by putting responsibility for the learning path in the hands of students. This is contrary to a top-down curriculum with summative assessment at the end (Tawjihi), which encourages "teaching to the test". ICT provides opportunities –but not guarantees- for this reform of teaching practices.

2. **Reform the curriculum: include emphasis on the development 21CS**

This does <u>not</u> mean to introduce a "21CS subject", but to reform the learning objectives in all subjects towards higher-order cognitive goals[1] in order to develop 21CS. ICT utilization can help only if it does not focus on operational skills, and is not used to create a high-tech teacher-centred instruction.

---

[1] See the "revised Bloom taxonomy" on learning goals.

Infrastructure and use vs. 21CS and utilization

A presentation by a teacher using Power Point is teacher-centred ICT use; a paper poster presentation by a team of students is much more effective for 21CS.

Of course, the ideal would be for all students, collaborating in small teams in the classroom and over the internet, drawing information from the library, the museum and the Web, on a subject of their interest evaluating this information for reliability and prejudice with the help of the teacher, making and publishing on-line presentations and peer-evaluating each other's work.

Such is student-centred ICT utilization for 21CS.

3. **To use 21CS assessment as a tool for transforming education**

A critical difference between student-centred and teacher-centred learning is in assessment. The former involves more formative and less summative assessment than the latter. In the former, students participate in the evaluation of their learning; they are involved in deciding how to demonstrate their learning, best done through portfolios and not through classical examinations. Developing assessment that supports learning and motivation is essential to the success of student-centred approaches. Attitude towards assessment must change for 21CS learning: in addition to assessment of learning, using assessment as learning and assessment for learning will help teachers and students develop 21CS.

21CS Policy Issues/Questions that must be decided upon

PR 1. **ICT, Digital literacy and 21CS**

21CS and student-centred instruction are transversal to all subjects and grades. ICT utilization in the service of 21CS must be available to all teachers and not be the exclusive province of technology teachers. This requires a policy for school infrastructure and ICT utilisation. An important aspect of MoEHE policy for 21CS is the assessment of educational utilization of ICT@E in each school.
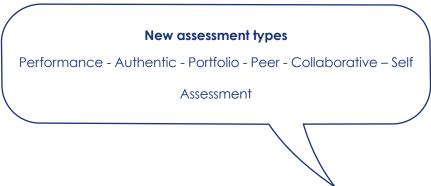
Simple operational use of ICT is very different from good educational ICT utilization. People with little ICT operational skills ("don't know how to use a computer"), including some teachers, tend to overestimate them, while young students, the so-called "digital natives", have acquired such skills outside school.

Digital literacy[2] is NOT just computer operational skills. As technology advances, simply "using a computer" becomes easier and widespread. In contrast, evaluating and properly utilising the digital information available becomes more difficult and requires more advanced skills. Using the digital tools is one of the 21CS, but the easiest one to acquire, to teach and to test. Utilising ICT for 21CS is much more difficult. It has long term learning results but no immediate ones to be assessed by 3-hour exams.

PR 2. **Assessment reform**

A new policy for assessment is required for the transition from the traditional assessment of learning, useful for certification and for placement, to assessment used as learning and for learning, necessary for the development of 21CS. The main reform is to shift emphasis from summative to formative assessment. The former is an assessment of the 'product' of learning for testing purposes, while the latter is an assessment of the 'process' whose purpose is to help learning. The policy should introduce new ways of assessment, educate the teachers and help apply them (see Policy Recommendations below).
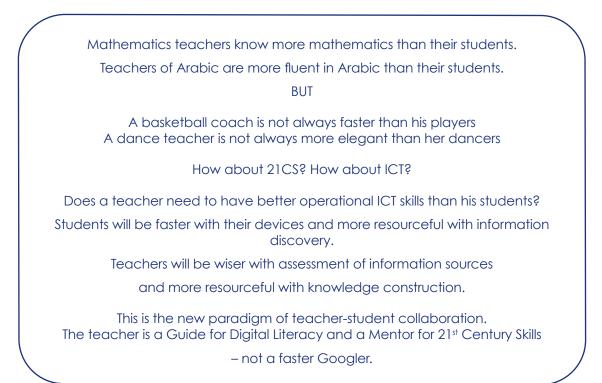
New assessment types

Performance - Authentic - Portfolio - Peer - Collaborative – Self

Assessment

---

2   The distinction between information literacy, media literacy and digital literacy is mostly of academic interest.

PR 3. **21CS for Educators**

Traditionally teachers know what their students are going to learn; they have already mastered the learning goals of their students and they possess the skills and attitudes which they cultivate for their class. This is not true about 21CS: teachers, in general, are the products of the educational system of the previous generation, and 21CS were certainly not part of the curriculum. If some of them happen to have 21CS to some degree, it is in spite of and not because of their education as teachers. So policies are needed for

a. Educating teachers in 21CS

b. Educating teachers in student-centred instruction and developing 21CS for their students

c. Dealing, for a long time, with educators without 21CS in an environment where 21CS are promoted.

> Mathematics teachers know more mathematics than their students.
>
> Teachers of Arabic are more fluent in Arabic than their students.
>
> BUT
>
> A basketball coach is not always faster than his players
> A dance teacher is not always more elegant than her dancers
>
> How about 21CS? How about ICT?
>
> Does a teacher need to have better operational ICT skills than his students?
>
> Students will be faster with their devices and more resourceful with information discovery.
>
> Teachers will be wiser with assessment of information sources
>
> and more resourceful with knowledge construction.
>
> This is the new paradigm of teacher-student collaboration.
> The teacher is a Guide for Digital Literacy and a Mentor for 21st Century Skills
>
> – not a faster Googler.

21CS-Related Challenges, Risks and Opportunities

Even our "best" schools are failing to prepare students for 21st-century careers and citizenship.

Tony Wagner, Harvard Graduate School of Education, USA

C1. **Ignorance, misunderstanding and superficiality**

The problem with 21CS goes beyond the fact that educators are not trained in them. It is easy to misunderstand and deal superficially with 21CS because they seem familiar: teachers usually believe they know what communication, creativity, or digital skills are. The result is "lip service" to 21CS. Although this familiarity makes it easier to start teacher training on 21CS, it soon becomes an impediment, because teachers have to unlearn and shed pre-existing notions.

There is no academic or practical agreement about what 21CS exactly are, although differences are not great. ICT utilization does not guarantee 21CS or student-centred learning. The issue is still under study and has not been resolved, even academically; at a practical system-wide level it is not even touched.

There is no related tradition; on the contrary, 21CS call for upsetting existing traditions such as: teacher and textbook authority, student solitary work, silence in class unless asked; even classroom and school design are teacher-centred.

> Need for
>
> - Awareness of 21CS
> - Combating misunderstanding about 21CS
> - Combating superficiality on 21CS development
> - Understanding how ICT relates to 21CS and student-centred learning
> - Upsetting traditions of authority and individuality

C2.   Challenges to assessment and curriculum reform

Summative assessment with a 3-hour exam is a well-trodden path. Its shortcomings notwithstanding, it has broad acceptance in the educational community and the wider society. It claims objectivity and clear rules, hence it appeals to social mistrust. However it is not possible to move towards student-centred learning and 21CS without reforming attitude and practice towards assessment, including the 3-hour, closed-books, solitary written exam. Development and assessment of 21CS cannot be done with traditional evaluation methods.

Utilizing ICT in student-centred instruction for the development of 21CS at system scale is a huge innovation for the Palestinian educational system. It requires changes in the curriculum, in teacher training, in school infrastructure and, most difficult of all, in the attitudes of students, teachers and the whole educational community. Because it is such an overhauling innovation it will cause big resistance and will take decades to achieve.

All social systems have a large inertia and resist change. Education, which is the connecting tissue of society in time, and school education in particular, which is the means by which the generation in power passes its values to the next one, is very resistant even to small changes. Teachers, students and parents alike, in spite of their complaints about the shortcomings of the existing educational system, will react to any reform, especially a big one as required for 21CS and student-centred learning.

This reform has a greater risk of failure[3], since initially there will be errors both in the design and in the application. There will be deviations from the expected results and greater, new and unexpected deviations among learners, teachers, schools and learning results.

The introduction of ICT is the only change which is sure to be welcome by all. Its usefulness, therefore, is twofold: it helps in essence and it helps as an excuse. The downside is that, at least some teachers will use ICT only operationally and continue with a high-tech teacher-centred instruction.

This is not a Palestinian problem alone. Utilising ICT for 21CS has only been achieved in few schools world-wide, which is why it is still so high in the agendas of educational systems internationally.

Policy recommendations to deal with these challenges are detailed below. The main point is to treat the reform as a long-term one, go gradually and promote the good results when they happen, without punishing the poor results which are certain to appear.

---

3   Risk is the variability of the expected results. In any standard, large-scale, time-honoured practice the actual results match the expected results to a large degree. Any innovation will invariably lead to a larger difference between actual and expected if only because of the unknown and unpredicted factors involved. A big innovation like student-centred instruction for 21CS with ICT is bound to lead to larger variabilities at the beginning.

Policy recommendations

PR 1. Choose a 21CS framework and prioritize

As a basis, MoEHE must first select one 21CS framework and set the priorities for 21CS development. Various conceptualizations ('frameworks') of 21CS exist, such as ATS21C (2001, Australia), Partnership for 21st C skills (2013, US), Lisbon Council (2007, EU), ISTE (2013), ETS iSkills (2013), CBI (2007). The frameworks do not differ much in concepts, (in that sense it does not make much difference which one is used by MoEHE), but they have different directions and support. In this choice MoEHE may want to take into account issues of political cooperation (UNESCO) and economic assistance.

In any case, it will facilitate communication, teacher training, integration in the curriculum and assessment if one framework is selected and used by all in Palestinian school education.

Priority setting should take into account not only the relative importance of each 21CS, but also the feasibility of cultivating each one, the curriculum and assessment reforms and the teacher professional learning required. Priority does not express importance in this case, but relative timing development. The MoEHE Monitoring and Evaluation System discusses some 21CS indicators in its strategic plan which can be taken into account when prioritizing.

PR 2. Implement: Long-term, gradually, holistically

Gradual implementation

Student-centred learning is a direction rather than a destination. The Palestinian Ministry of Education should deal with this as a long-term goal (over 10 years) with a focused and phased (gradual) approach. It should not try to address and assess all 21CS in all subjects by all teachers in all schools in a few years. This is not a recommendation for more pilot projects, but for a staged application in the whole educational system. There is a lot of space between small pilot projects and full system-scale.

> ICT@E for 21SC: Some difficult but feasible goals for the next 5 years
>
> 1. Each calendar year, select one school subject and a specific 21CS for it. Add it in the curriculum in the form of technology-enhanced learning activities for each school grade. Add it to teacher professional learning -TPL
> 2. Inquiry-based learning is sufficient for STEM (Science, Technology, Engineering, and Mathematics). Set an ambitious but feasible goal for the next 5 years: inquiry-based learning for STEM to reach 30% of the science teachers in their TPL and practice.
> 3. In the humanities and social sciences, for 21CS stress information selection and evaluation. Use the whole World-wide Web as a testbed, to cultivate digital and information literacy.
> 4. Establish that 25% of students' marks, including University entrance, will come from submission of work completed in small teams. Design specific learning activities for all school grades for such collective work.

Holistic implementation - Apply 21CS in whole educational system

It is not possible to reform each aspect of the educational system separately (teaching practices, curriculum and evaluation): if teaching promotes skills which are not assessed, or worse, if teaching promotes skills contrary to what is assessed (e.g. collaboration), students will ignore it and parents will revolt. It is clear that teaching, curriculum and evaluation must be aligned and this is a major difficulty for all educational reforms.

PR 3. **Educate teachers and assess teaching appropriately**

For teachers to provide student-centred instruction aiming at 21SC, they need to experience it themselves in practice. Unfortunately, teacher professional development in 21CS and student-centred instruction is often conducted through lectures, i.e. through a teacher-centred instructional system. This is counterproductive.

Finding instructors to help teachers develop 21CS and provide them with such experiential learning will be the main bottleneck for the large scale application of student-centred learning with ICT aiming at 21CS.

Although teachers do not need to have fully developed 21CS in order to teach accordingly, they need to understand what they are, respect them and know how to teach with them. It is not necessary that a teacher is a creative thinker in order to promote creative thinking in her teaching; but she needs to recognize creative thinking in her students and to master methods that advance creative thinking. Teachers should be guided by specific clear learning outcomes and be free to enhance learning creativity through multiple sources of knowledge.

Assessment of teaching

Internationally, shifting emphasis towards 21CS has proved to be extremely difficult for teachers. Teachers tend to reproduce their experience as students and as teachers in training. In order for teachers to change their attitude towards assessment, their own assessment (by school principals and supervisors) must change; it must become Assessment <u>for</u> teaching (guidance) instead of Assessment <u>of</u> teaching (evaluation).

How to deal with (principals, supervisors and)

Teachers without 21st century skills

- Recognize this fact without blame: Promote success, allow for failure
- Work with universities for long-term teacher pre-service and in-service programs to cultivate 21CS
- Imitate sports couches who teach what they themselves understand but cannot do
- Do not substitute developing 21CS with learning <u>about</u> 21CS
- Ignorance is better than misunderstanding: Do not pay lip service to 21CS
- Add 21CS to the Palestinian teacher professional standard
- Encourage teamwork and online learning communities among teachers
- Change the role of the teacher as information transmitter:

    Good teachers help their students discover the material
    Lazy teachers cover the material themselves

PR 4. **Reform Curriculum for 21CS and Assessment <u>for</u> learning**

There is a fundamental contradiction between Tawjihi-type assessment and 21CS. The curriculum as it stands and Tawjihi in particular do not concur with ICT@E for 21CS. They should be gradually reformed and examinations should be accompanied by an evaluation system that encourages 21CS. A good practice is to encourage schools, teachers and students to adopt the use of portfolios and e-portfolios to monitor learning and progress and use them for both formative and summative assessment. Since formative assessment is mainly done by the current teacher, the use of e-portfolios helps to overcome subjectivity in assessment.

Some good practices in assessment:

- Develop and use *Rubrics*, i.e. criteria and indicators, so that the result of assessment is a multi-dimensional description, not a simple number.

- Do not just follow the hierarchy, i.e. from the ministry, through supervisors and principals, to the teachers and finally the students. Use self-assessment, peer assessment, collective assessment and upwards assessment.

- Offer teachers good training and more freedom regarding assessment.

The qualitative assessment of utilization of ICT in schools is also important. Indicators such as number of students per computer or weekly hours of student computer use do not show the pedagogical content of ICT utilization. Qualitative studies should be regularly carried out by independent scientists to assess the type of ICT utilization and in particular to what degree it promotes 21CS.

Formulate a National Strategy for Assessment that takes into account both quantity and quality aspects; design learning activities based on performance, applications and projects, and reinforce activities that promote reflections. Align the curriculum with 21CS (learning goals, content and activities, instructional design and methodology, resources and evaluation).

> **From assessment <u>of</u> learning to assessment <u>for</u> learning**
>
> Certifying, summative, result, at the 'end' à Coaching, formative, process, on the way
>
> Individual, Objective à Authentic, contextualized assessment
>
> Simple grading à multi-dimensional student profile ('rubric', 'portfolio')
>
> Simple à Complex, Higher cognitive competencies
>
> Cognitive à Metacognitive, Emotional, Social Skills (21CS)
>
> Independent of learning process à Part of learning process
>
> Teacher's responsibility à Student's responsibility
>
> Assessment of à Assessment for & as learning

PR 5. **Advance a Palestinian version**

With the exception of digital literacy and tools, the 21CS are not new –what is new is the need for the whole population to have them plus the affordances of ICT for cultivating them.

Technology and education are currently led by the so-called Western world[4]. Although 21CS are ecumenical at a higher abstraction level, their implementations include principles and values which do not always take into account the sensitivities of each particular nation's traditions and values. Adopting a 21CS framework should not mean blindly copying a foreign educational system, but it should offer a chance to benefit from it.

A Palestinian version of 21CS can benefit from the inclusion of Arab and Palestinian traditions and values, whose richness and depth include creativity, collaboration, flexibility and adaptability; they provide models of global citizenship, problem-solving, and decision making. Religion includes personal responsibility.

---

4   See Tech imperialism vs education idealism in California from the International Council for Open & Distance Education

Examples of Changes in the Curriculum and Teacher Practices

It will be the task of the Palestinian Institute for Educational Technology (see Policy Paper #0 – ICT@E) to make a detailed plan of the reform in teacher practices and the curriculum for 21CS and student-centred learning. Here are some examples of how specific 21CS connect with teaching practices and issues in the curriculum:

Creativity and innovation entail risk. Encouraging creativity and innovation in education means that students are not punished in any way for failing. To promote creativity and innovation, evaluation should not be towards a pre-set standard.

Communication, collaboration and teamwork go against examinations which test (only) individual work and assign marks for individual progress and attainments.

The very concept that a teacher should 'cover' the material specified in the curriculum is contrary to problem-solving –which takes much more time than lecturing.

Digital literacy, whose cornerstone is evaluating and choosing among many sources of information, is the opposite of the single, authoritative textbook which the teachers teach, the students learn and against which they are evaluated.

Some of the 21CS (such as critical thinking, metacognitive skills, learning to learn, creativity, integrity) look deeper into the individual self. To develop them adaptive personalised instruction is needed.

Others (such as collaboration, teamwork) are intrinsically related to teams and need collaborative educational settings to be cultivated.

And finally, some, (such as leadership and entrepreneurship) can only be cultivated in complex social settings which can be simulated with the help of ICT in school.

Examples of good Teacher practices in Student-centred instruction

Do not tell your students what to do; guide them in their own chosen path of learning.

Set the framework and let students experiment, choose, and decide.

Challenge students until they decide and support them after they have decided.

Promote success but allow for failure.
Do not 'punish' mistakes in any way: they are valuable for learning.

Criticise only constructively, which includes:

The attitude (the student should not feel rejection) and

the substance (the student needs directions for improvement).

Challenging questions are a very good way for constructive criticism.

This is not anarchy, not does it mean that "students do whatever they like";

But student-centred, self-regulated learning implies trust:

If you do not believe that students want to learn, you cannot practice student-centred instruction!