

# Enterprise catalyst

**What it is:** Enterprise catalyst is an online questionnaire with automatic algorithms to provide a detailed report to the user based on their results. The report is available to six different target audiences including schools, those in further or higher education, teachers and lecturers, employees, employers or business owners, and others ('none of the groups seem to fit me').



**How it works:** Enterprise catalyst provides a range of different user types with an online assessment and coaching tool that gives insight into the user's entrepreneurial mind set (i.e. their attitudes and behaviours), with connections made to career options and entrepreneurial pathways. Users fill in the questionnaire for free by clicking the relevant box between comparative and contrasting pairs of statements. These statements are repeated in different questions as a control mechanism. There are three sections depending on the user type: describing oneself, awareness of and involvement in entrepreneurial activities, and personal statements. The questionnaire does not use start-up terminology and is firmly focused on supporting the individual and providing them with insight into their own characteristics. In addition, education institutions can use the tool for benchmarking and funders/deliverers may measure the impact of programme investments on a range of outcome criteria.

**Benefits:** The benefit for the individual user consists of an insightful report with personalised results across four or five sections. The different audiences get the same basic type of analysis; however, the language is tailored for that specific audience, e.g. simpler for younger learners. Younger

learners get an additional section on personal learning and thinking skills. The sections are 'Enterprise fuel', 'Enterprise style', 'Encouragers, support and obstacles', 'Team role', and 'Personal learning and thinking skills'.

**Challenges:** The tool has so far only been used in the UK and is only available in English and Welsh. The presentation is not dynamic and based only on a tick-box approach.

**Relevance for entrepreneurial teaching:** Enterprise catalyst is squarely focussed on the individual focussing on skills rather than using start-up terminology. The tool works at user and macro level and can act as a detailed learning or discussion tool for job seekers / employment agencies, employees / employers, or students / educators.

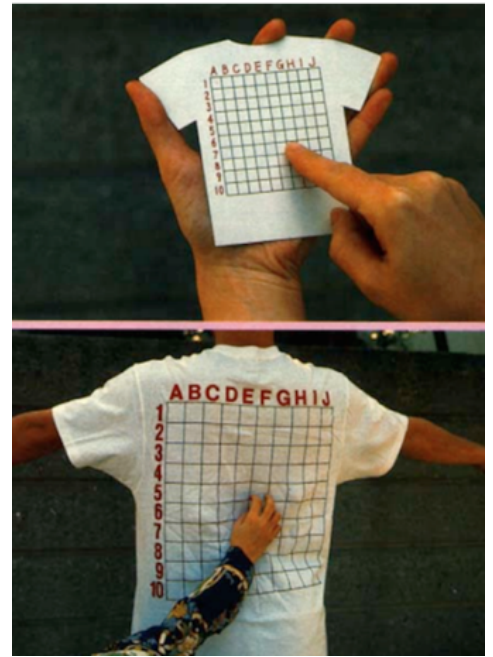
**Applied assessment methods:** The tool uses e-assessment, reflective assessment, and self-assessment.

**Examples from practice:** Enterprise catalyst has been used at regional level in Wales.

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## Rubrics

**What it is:** A rubric is a coherent set of criteria for student's work that includes descriptions of levels of performance quality on the criteria. The main purpose of rubrics is to assess performances, that is to say the things students would do, make, say or write. The rubric describes a performance, understood either as a process (e.g. a pitch) or as an artefact (e.g. constructed object). The focus is on learning and not on completion of tasks per se.



**How it works:** The rubric is a 2D grid where criteria are listed in the left hand column and levels of performance in the upmost row. The individual squares in the grid contain descriptors for the level of performance for each criterion. The rubric may or may not contain a mechanism to attach points or grades to different levels of performance.

**Benefits:** Rubrics help students understand intended learning outcomes and criteria for success. They guide teacher observations and allow more detailed and objective feedback. If designed for repeated use, over time on several tasks (general rubrics), rubrics help coordinate instruction and assessment.

**Challenges:** Large numbers of criteria and lengthy descriptors for each level of performance may have negative consequences, particularly with younger students. At the other end of the spectrum, the danger lurking is oversimplifying highly complex behaviours to a very tight set of criteria. It is not easy to write good descriptors for each level and each criterion. More often than not, the theoretical basis on which progression across levels of the rubric has been established is often unclear. Rater bias remains problematic particularly when the levels of performance are vague.

**Relevance for entrepreneurial teaching:** Teachers often rely on rubrics to assess entrepreneurial performances. The extent to which a rubric helps teachers in capturing the willingness, readiness and ability to put into practice entrepreneurial skills is largely dependent on finding the right mix of observable criteria and being clear on the levels of expected performance. Engaging students in the design of the rubric may be a good idea to fine tune the tool but it will never be perfect. While tempting, equipping ourselves with a rubric for each entrepreneurial skill may result in an unbearable assessment workload. Strategies to prevent “death by rubric” entail coordination with other teachers as well as introducing self-assessment and peer-assessment methods. Last but not least, rubrics should not be considered the “end-of-it-all” of entrepreneurial assessment. Rubrics could conceivably play a constructive role in designing assessment tasks that capture the sheer complexity of behaviours elicited but only if combined with other sources of information.

**Applied assessment methods:** Formative Assessment, Authentic Assessment, Performance Assessment, Self-assessment, Peer-Assessment

**Examples from practice:** Plenty of ready-made rubrics, templates and rubric generators (e.g. Rubistar) are freely available online.

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**INNOENT      Idea      Evaluation**  
**Rubric**

**What it is:** This is a tool for evaluation and/or situating the progress of ideas and inventions during the progression of innovation education and entrepreneurship education. It can be used online or as a pen and pencil rubric.

Business plan	Environmental sustainability	Sustainability of company
Has not been done	No attempt made to find out about the influences of the idea on the environment	No plans for further running of the production
In draft form	There is understanding of the importance of environmental sustainability of the product	And understanding is there for what is needed for the sustained running of a company and the further product development for a company to be sustainable
Data collection underway	Data gathering and analysis regarding the environmental strategy of the production has started	Plans have been made to ensure further product development and research to sustain the company
Business plan in the last stages of preparation, analysis of data off underway	Environmental strategy of the company is ready. It is clear that the product development is well away	Clear sustainability strategy and work already started on further development and research on new products and steps
Business plan is ready and has been shown to investors, but the business is not up and running	Environmental sustainability is ensured at all levels of production and product design as well as in the running of the company	Sustainable growth plan is already a part of the overall company profile
Business plan has been implemented and start-up made	Environmental standards are used in all levels of production and lifecycle of all products	The company has the necessary resources to implement the research and development strategy

**How it works:** The rubric is used by participants in workshops or courses in entrepreneurship education. The rubric provides standards for each step of the process, need, solution, product, product development and business plan. The inventor/entrepreneur uses the emerging profile to situate the idea on a scale. Each idea the participant is working has a rubric attached to it and the participant can change the marking on the rubric as many times as he/she finds necessary as the idea progresses. This evaluation is for the participant's use only, where the teacher/mentor does not have to see it. However, it is often shared with the teacher at the beginning and end of a course.

**Benefits:** The most common benefit observed is how the individuals use the standards to make up their minds about how far they want to take each idea. They use it to determine where the idea is situated in the progression from a need to a full business, and to decide if they want to take the idea any further. The rubric benefits the participant as they can use it as a guide to suggest the next steps they could, or should, take in the progression of the idea.

**Challenges:** If students are not familiar with evaluating their own work using the rubric effectively can be a challenge.

**Relevance for entrepreneurial teaching:** Managing many ideas at the same time is crucial for the serial inventor/entrepreneur. This tool allows for prioritisation of ideas and their progress as well as putting forward suggestions of what could

or should be the next step in the progression. The tool increases the entrepreneurial vocabulary of participants as well as allowing them to put self-determination into practise.

**Applied assessment methods:** This tool can be viewed as ipsative assessment in so far as the participant is constantly looking at furthering the progression of the invention/idea. The tool is inherently self-directed and is digital in nature.

**Examples from practice:** The tool has been used in teacher education in Iceland where innovation education is a substantial part or a main focus of courses. It has been used in several INNOENT Education courses in Iceland but more in the Middle East and Far East. Participants use the tool to evaluate the eligibility of an invention for production, for funding or to access international competitions such as ITEX.

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## Personal Attributes

**What it is:** This tool is a sliding scale list for individuals to situate their preferred personal attributes. The tool is based on a rubric published in 'The Idiot Teacher' by Gerard Holmes (1952).

APPENDIX									
DESIREBLE as opposed to correspondingly UNDESIRABLE QUALITIES									
LEADERSHIP								LACK OF INFLUENCE	
INITIATIVE								LACK OF INITIATIVE	
ENERGY								LAZINESS	
PERSEVERANCE								LACK OF STAMINA	
RESOLUTION								HESTANCY	
COURAGE								TIMIDITY	
CONFIDENCE								ANXIETY	
COOLNESS								EXCITABILITY	
ALERTNESS								STOLIDITY	
CONCENTRATION								LACK OF CONCENTRATION	
RESOURCE								HELPLESSNESS	
SINCERITY								INGENUITY	
HONESTY								UNDERSTULOUSNESS	
OBEDIENCE								REVOLT	
CONSCIENTIOUSNESS								CAPRICE	
WILLINGNESS								RELUCTANCE	
COOLITY								INTRACTABILITY	
FRIENDLINESS								HOSTILITY	
ESPION DE CORPS								SELFISHNESS	
ACCOMMODATIVENESS								OBSTINACY	
HUMILITY								CONCEIT	
GENEROSITY								GREED	
ORIGINALITY								CONVENTIONALITY	
ACCURACY								INEXACTITUDE	
ORDERLINESS								LACK OF SYSTEM	
SENSE OF HUMOUR								IGNORING THIS SENSE	
IMAGINATION								UNIMAGINATIVE	
ATTENTION								INATTENTION	
LOGIC								SOPHESTRY	
TRUTHFULNESS								SUPPLIFUGE	
GRACE								INSOLENCE	
MODERATION								WROTHENESS	
PATIENCE								IMPATIENCE	
FORESIGHT								LACK OF FORESIGHT	
OPENNESS								SECRETIVENESS	
50%									

**How it works:** The scale is predetermined by the teachers or leaders of the group. The number of attributes is up to the

practitioners and is dependent on the attributes that are related to the present work and goals. Individuals use the scale as a pre and post evaluation of their own progression. For that to happen individuals need to understand the language used. The development of the vocabulary happens in the class discourse with or without the leadership of the teacher.

**Benefits:** Understanding of language is the foundation needed to consciously work on and with personal attributes. Engaging with concepts such as integrity and deceit, being enterprising and passive in the context of the work allows individuals to form an opinion of the concepts and how much they mean to them. In this way, individuals develop both self-understanding as well as a greater understanding of their ethical stance.

**Challenges:** Personal attributes are in many ways not central to the way education is evaluated now so the challenges are mostly due to the structure or accepted evaluation structure of education. Also, teachers have a problem with where to situate this kind of evaluation, in relation to the most suitable subject area. Understanding the language used in personal attribute discourse can be challenging for students.

**Relevance for entrepreneurial teaching:** Understanding one's strengths and weaknesses is essential to be able to take calculated risks and approach different situations and individuals in appropriate ways. A strong understanding of who one is and personal capabilities is core to entrepreneurial education.

**Applied assessment methods:** This tool can be used in formative assessment and can be categorised as performance assessment and/or self-assessment.

**Examples from practice:** This tool has been used in a few locations in Iceland in different contexts and with different ages. The pilot test of this was conducted in one school in Reykjavik where 159 students were asked to use the sliding

scale to evaluate their understanding of themselves. The youngest group that took part in this were in year 5 and the oldest group in year 10. Each individual filled out the form and gave it to the researcher as a pre-test and at the end of the course the students filled the form out again and gave comments on their progress. The results from this pilot gave promising results for further development.

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# Assessment and Teaching of 21st Century Skills (ATC21S)

**What it is:** ATC21S is a system enabling formative assessment of Collaborative Problem Solving. ATC21S™ has been designed to support the development of social and cognitive skills needed to become a good collaborative problem solver.



HEADQUARTERED AT THE UNIVERSITY OF MELBOURNE  
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**How it works:** The system consists of four main components:

1. Empirical progressions representing a typical pathway for Collaborative Problem Solving (CPS) skill acquisition;
2. An online assessment platform containing prototype assessment tasks. Tasks require students to work in pairs and collaborate in real time. Students responses are recorded in a log file and rated automatically;
3. A survey completed individually by each student;
4. Individual and whole-class reports.

**Benefits:** The system adopts a developmental learning approach



to assessment and instruction. It guides a student's learning forward along a path of increasingly complex knowledge, skills, and abilities. Reports provide data on the emergence of skills mapped against empirical progressions that allow teachers to identify patterns and gaps at individual and/or class level and tailor instruction accordingly to challenge their students to move forward on a developmental continuum. The Project website provides open access to five professional development modules for teachers.

**Challenges:** None of the designed tasks could sample all the elements of the CPS construct comprehensively. The capacity to capture cognitive skills is greater than the capacity to capture the social skills. The empirical progression needs further investigation. Some other challenges relate to the limitations of online administration and complexity. Potentially a similar approach could be scaled up and adopted to assess application of skills in real-world contexts without compromising the ability to measure them.

**Relevance for entrepreneurial teaching:** ATC21S conceptualisation of Collaborative Problem Solving as a combination of cognitive and social processes displays a good number of features defining the entrepreneurial key competence (e.g.: goal setting, resource management, tolerance for ambiguity, audience awareness, negotiation, to name a few). The rigorous approach to build an empirical progression and the elaboration of a set of IT-based prototype assessment tasks represents an inspiring example for the design of entrepreneurial teaching and learning activities and assessment tasks.

**Applied assessment methods:** Formative Assessment, IT-based Assessment, Performance Assessment.

Examples from practice: During 2009-2012, the prototype tasks were trialled by schools in Australia, Singapore, the United States, the Netherlands, Finland and Costa Rica. In 2011, each participating country assessed a minimum of 660 secondary

school students.

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# New Zealand Key Competence Self-Audit Framework

**What it is:** The tool is a self-audit framework of questions for teachers about effective pedagogy and the design of learning experiences that will stretch students as they encounter purposeful key competency/learning area combinations.



**How it works:** The framework provides nine simple questions that can underpin teachers' inquiries into how well the key competencies (KC) are being embedded into learning.

	Taking the initiative	Building connections	Being challenged
Design	Which KC do I plan to foreground and why? How will students know what my purpose is?	What relevant prior experience and knowledge might students have already? How do I plan to check?	What specific learning opportunity could this Key competency/Learning area mix create?
In action	How am I modelling and encouraging the capability I want my students to build?	Are/how are students identifying relevant connections to other learning and prior experiences?	Have I got the right balance between challenge and capability? How do I know?
Future focus	How have my students and I identified and documented their learning gains?	How might students use their strengthened capabilities in other contexts? What will support them to do so?	What new insights about the challenges and opportunities in this subject might my students take forward?

**Benefits:** There are reciprocal relationships between the learning areas and the key competencies. When these

relationships are purposefully exploited both the learning areas and the key competencies are strengthened. Opportunities to develop key competencies can play out as opportunities to develop learning areas and vice versa. These materials support in-school professional learning conversations.

**Challenges:** Focus may be lost if teachers are faced with an overtly complicated construct (sheer amount of skills, attitudes to bear in mind). Lack of clear progression models and failure to find common strategy with other teachers/learning areas may also hinder the potential of this tool.

**Relevance for entrepreneurial teaching:** The nine questions prompt a useful reflection on how to better embed the entrepreneurial key competence in the classroom.

**Applied assessment methods:** Self-assessment (teacher),

**Examples from practice:** The tool incorporates a mosaic of 14 engaging examples of practice that show what this pedagogy might look like in different learning areas and insights into important aspects of the key competencies.

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# EntreComp

**What it is:** The EntreComp framework is a reference de facto for any initiative aiming to foster entrepreneurial capacity. It consists of three interrelated and interconnected competence areas, each of which is made up of five competences. Together, they constitute the building blocks of entrepreneurship as a competence. The framework can be used as a basis for the development of curricula and learning activities and is useful for the definition of parameters to assess learners' and citizens' entrepreneurial competences.

**How it works:** The EntreComp framework can be used to both plan lessons based upon the competencies and to facilitate learner and/or teacher led assessment of attainment. The progression in entrepreneurial learning is made up of two aspects:



1. Developing increasing autonomy and responsibility in acting upon ideas and opportunities to create value
2. Developing the capacity to generate value from simple and predictable contexts up to complex, constantly changing environments.

**Benefits:** The framework provides simple to follow progression levels, which can be readily mapped against a learner's attainment. There are ready-to-use learning outcomes that can be used to develop and evaluate lessons. The EntreComp Framework is readily available and free to download which makes it accessible to all. It is easy to share with pupils in a language which they can understand. It can also be used to show the progress of pupils who struggle in more formal subjects such as English and Maths.

**Challenges:** The main challenge of using EntreComp is that it is currently not a statutory requirement to assess enterprise

skills in many national curricula and therefore interaction with it may be limited. If enterprise is not a main priority in a curriculum and its assessment, application of the framework could feel like a pointless exercise because it does not count towards any end of key stage level.

**Relevance for entrepreneurial teaching:** EntreComp is a result of a multi stakeholder approach to linking entrepreneurship in schools and work. It is designed to be a reference point for anyone taking part in entrepreneurial education.

**Applied assessment methods:** The full range of assessment vehicles, formative and summative, can be used. Progression can be seen through 'distance travelled' between learning outcomes.

**Examples from practice:** The EntreComp framework facilitates learning, teaching and assessment across all levels. For example, in Wales it is being used to train primary school teachers at one end of the spectrum, and as learning outcomes in Doctoral Level studies at the other.

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# Enterprise and Employability Challenge

**What it is:** The Skills Challenge Certificate acknowledges the assessment of the essential skills within the Welsh Baccalaureate qualification, including literacy, numeracy, digital literacy, critical thinking and problem-solving, planning and organisation, creativity and innovation and personal effectiveness.



**How it works:** The purpose of the Enterprise and Employability Challenge is to provide opportunities for learners to develop enterprising skills and attributes and enhance employability. In this Challenge learners have the opportunity to create and implement innovative ideas based on meeting the needs of customers and/or businesses by developing a product or service through a guided enterprise process, which includes liaising with employers and interacting with successful local entrepreneurs. Learners complete challenges that are designed locally or nationally, either by the Centre delivering the qualification, or by external organisations.

**Benefits:** During the Enterprise and Employability Challenge, learners explicitly develop skills in Digital Literacy, Creativity and Innovation and Personal Effectiveness and apply them in an appropriate manner. The challenge enhances employability by enabling learners to be more opportunity-focussed, self-aware and attuned to the business environment, offering them the opportunity to develop team-working and positive relationship-building skills, as well as the ability to work independently. Learners also gain an appreciation of the use of social and other electronic media in business by developing and applying digital literacy skills in creative and innovative ways.

**Challenges:** The greatest challenge with this tool is the

ability and confidence of the teacher in developing, modelling and assessing the essential skills, particularly those related to creativity and innovation, as these are relatively new concepts within the national curriculum in Wales. Therefore, teachers need support in applying more active and participatory pedagogies within the traditional classroom. Teachers, as well as learners, need to have a can-do attitude and the drive to make ideas happen.

**Relevance for entrepreneurial teaching:** The Enterprise and Employability Challenge within the Welsh Baccalaureate was written specifically to offer learners the opportunity to develop the creativity and innovation skills needed to become an entrepreneur. The Challenge itself is based on active hands-on learning and, as such, fully supports entrepreneurial education. The emphasis is on applied and purposeful learning and to provide opportunities for assessment in a range of real life contexts.

**Applied assessment methods:** The Enterprise and Employability Challenge is assessed through self-assessment (via a skills audit), performance assessment (via a visual display and 'pitch' of the business proposal), and reflective assessment (via a personal reflection).

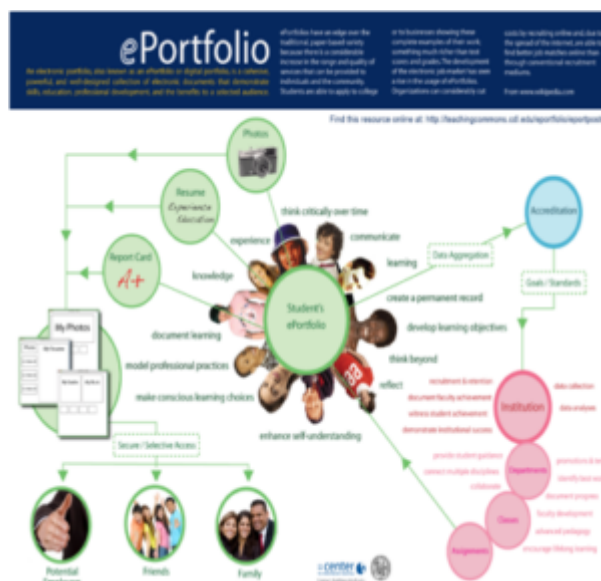
**Examples from practice:** The Enterprise and Employability Challenge is undertaken by learners aged between 14 and 16 years in comprehensive education in Wales, as well as 16+ year olds undertaking post compulsory education.

See more at: [www.wjec.co.uk](http://www.wjec.co.uk)

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# E-PORTFOLIO

**What it is:** An electronic portfolio, also known as an ePortfolio or digital portfolio is a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one or more areas. The collection often includes student participation in selecting content, the criteria for selection, the criteria for judging merit, and evidence of student self-reflection. Portfolio means both process and product, path and goal, tool and toolbox, method and principles. The term "E-Portfolio" appears both in educational and professional contexts and involves using online tools.



**How it works:** An ePortfolio is made by the student and is a cohesive, well-designed collection of electronic documents that demonstrate skills, education, professional development, and the benefits to a selected audience. Students are able to apply to college or businesses showing these complete examples of their work, which are often much richer than test scores and grades. An ePortfolio can be 'open' and 'shared' with other students, partners and whole professional communities. In the construction of the portfolio the student can take the initiative, and can demonstrate responsibility for himself and his peers. ePortfolios can be used to integrate non-formal and informal learning outcomes into the formal learning process and result in the student becoming more aware of his or her competences.

**Benefits:** Students can experience team work and practice cooperation and dialogue. In addition they learn how to



effectively self-assess, document and present their achievements. The teacher has a good overview of how students learn and sees evidence of their efforts, progress and achievements. The school can assess students' learning and progress more frequently and more accurately in a process of dialogue, where feedback is provided in the process of developing the portfolio. Overall, the teacher can see the students' growing authenticity and can learn more about his/her personalities.

**Challenges:** ePortfolios may be mismanaged whenever the above principles are neglected for reasons of impatience, ignorance or simple misunderstanding. When used for examination purposes, ePortfolios can lead to a demand for and overemphasis on standardisation, in contradiction of the various aspects of the principal of choice ("Standardised Portfolio"). Portfolios can ask too much of students if all teachers want to employ portfolios for all purposes all the time.

**Relevance for entrepreneurial teaching:** In relation to entrepreneurial education, ePortfolios show experiences of young people as active participants in society, engaged in continuous learning, self-discovery and exploration of the world. It is an interesting tool because teachers can evaluate the level of development in entrepreneurial competences overall, particularly if they use rubrics. It can be useful in active learning methodologies where students become the protagonists of their own learning especially where the main goal is the development and acquisition of varied and relevant skills, a diverse range of competences and meaningful, positive learning dispositions.

**Applied assessment methods:** The ePortfolio is a good example of an e-assessment tool that allows reflective assessment, development of skills feedback and is useful when applied to performance assessment models. Through this process of learning and development, the young person begins to acquire

and develop capacities for reflective judgement, self-awareness, personal responsibility and self-directed ethical behaviour.

**Examples from practice:** There are several good practises in Basque Country VET Schools of using E-portfolios.

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# Five habits of creativity

**What it is:** Five habits of creativity (see here and here) is a tool to carry out formative assessments of student creativity in school. It presents a five-dimensional definition of creativity:



1. Complex and multifaceted, occurs in all domains of life;
2. Learnable;
3. Important to be successful in life;
4. Analysable as personal dispositions;
5. Influenced by context and social factors.

**How it works:** The tool focuses on five dispositions of creativity (each with three sub-dispositions) called “habits”:

1. Inquisitive;
2. Persistent;
3. Imaginative;
4. Collaborative;

## 5. Disciplined.

The tool is “a paper-tool” designed to track the development of each of the 15 sub-dispositions along three dimensions – strength, breadth and depth: Strength is seen in the level of independence demonstrated by pupils in terms of their need for teacher prompts or scaffolding, or their need for favourable conditions; Breadth is seen in the tendency of pupils to exercise creative dispositions in new contexts, or in a new domain; and Depth is seen in the level of sophistication of disposition application and the extent to which application of dispositions is appropriate to the occasion.

Each student’s profile is mapped regularly by assessing the sub-dispositions of the five habits and recording achievement, citing concrete behaviours and, describing the depth, breadth and strength according to the teacher’s observations. The tool is presented to the students in connection to aims, content of learning and vocabulary. Students assess their progress on sheets with exemplar statements describing each sub-disposition, showing how he/she is developing. It has been found that focusing on one habit at a time can be useful.

**Benefits:** The tool acts as a prompt to teachers to maintain focus and as a formative assessment tool to track pupil creativity. The two main benefits of assessing progress in the development of creativity were identified as: 1) teachers can be more precise and confident in developing young people’s creativity; and 2) learners gain an understanding of what it is to be creative (and how to use this understanding to record evidence of their progress). This leads to a greater likelihood that learners can display the full range of their creative dispositions in a wide variety of contexts.

**Challenges:** Formative assessment has a view of reality that sees reality as socially constructed rather than objective and thus variables assessed formatively are complex, interwoven and difficult to measure. From a teacher’s perspective this

tool seems to be time consuming, as many formative assessment tools tend to be.

Relevance for entrepreneurial teaching: The relevance of the five habits of creativity tool lies in: Clarifying and understanding learning intentions and criteria for success; □Engineering effective classroom discussions, questions and tasks that elicit evidence of learning; □Providing feedback that moves learners forward; □Activating students as instructional resources for each other; and Activating students as owners of their own learning.

Applied assessment methods:

1. Assessment for learning,
2. Possibilities for using as Assessment of learning,
3. Self-assessment.

**Examples from practice:** A list of the schools (different school levels) is provided in the 2012 report and both reports describe to some extent the experience of their use of the tool.