MODULE B: Creativity Education Historical Roots Matrix, Part I: Matrix:

	Who/What? (people, events, concepts, what did they do, what create)	Where/When? (context, circumstances, timeframe)	Why? (why happen, why important)	How? (how effects current practice/growth of field and/or your current thinking)
1	**E. Paul Torrance** (1915-2003) was a psychologist and is best known for his research in creativity. He also created the Future Problem Solving Program International, the Incubation Curriculum Model (TIM), and the Torrance Tests of Creative Thinking (TTCT).	His teaching career spanned from 1957 to 1984. First, he taught at the University of Minnesota, later at the University of Georgia, where he became professor of Educational Psychology in 1966.	E. Paul Torrance, who is known as the "father of creativity" is very important because he wrote over a thousand articles, books, journals and papers for his research in creativity.	Through his longitudinal study of creative children, he described factors that supported the development of full creative potential in adulthood. He included things like doing your best, engaging in deep thinking, tolerating mistakes and loving your work and doing it well. He seems to be the grown up that has never forgotten what it's like to be a child.
2	**Torrence Incubation Model.** It gives teachers a model to create lesson plans that will develop the student's creative thinking skills, while covering another subject. Besides that is saves time and gets the students really involved in their own learning.	Torrence started to investigate Creativity in the Classroom from 1960's and developed TIM around 1990 with H.T. Safter.	It has been thoroughly grounded in theory, research and practice of creative problem solving. It uses three stages of learning: Heightening anticipation, deepening expectations and extending the learning.	TIM is based on the understanding that learning is a process, not an event, and that learning should be designed with more than the classroom in mind. I personally tried it already and I must say the difference in student behavior is significant. As cherry on the cake, I have much more fun teaching when my lecture is TIM-proof.
3	**Ruth B. Noller** (October 6, 1922 – June 3, 2008) is known for her work as a scholar in creative studies. Dr. Noller was a Navy veteran of World War II, mathematician, and Distinguished Service Professor Emeritus at State University of New York. Besides being the second women computer programmer, she worked for the Navy during WWII. She was a mathematics professor, pioneering teacher and scholar in the young field of creativity studies.	Ruth Noller worked closely together with Sid Parnes on the Creative Studies Project which led to the establishment of the world's first master's degree program in creativity at Buffalo State in 1975.	Noller developed a formula describing the factors that produce creative behavior: C = fA(KIE), Creativity is $f$ollowed by the interaction between Knowledge (K), Imagination (I), and Evaluation (E). Crucial catalyst in this formula is the individuals attitude (A).	She and her colleagues conducted the classic Creative Studies Project lending foundational support to deliberate teaching for creativity. She has been one of the most important female agents for creativity, interestingly enough coming from a mathematical side.
4	**Dr. Susan P. Besemer** designed and tested a 3 factor scale for measuring the creativity in products. Three categories include: 1) Novelty or statistically infrequent. 2) Resolution or the degree to which it solves a problem, fits a situation, is logical, works. 3) Elaboration and well crafted, elegant, expressive, catches attention.	The test is called CPSS Creative Semantic Productive Scale and was developed in 2006..	New products introductions are in 35% of the cases merely failures. How do you know what's a winner and what's not?	I think it's important to have a scale to measure a wide variety of creative products, because of their subjective nature, and the subjective nature of the judge(!). The evaluation criteria Novelty, Resolution and Elaboration can help to judge the value of new products.

5	**Characteristics of creative learners** According to Davis (1992): Original, independent, risk-taking, energetic, curious, humorous, attracted to complexity, artistic, open-minded and perceptive. Stubborn, argumentative, demanding, self-centered, temperamental and emotional are also associated with the creative personality.	There are many individual differences in receptiveness to creativity training. People with these creative traits are more likely to respond positively to such training. It can be useful to check on beforehand what audience/team you are working with, in order to set your priorities and expectations.	It's important to notice that not all traits are to be considered positive. Some are seen as negative: Stubbornness for example. But it comes in handy when there is criticism of your ideas as in the case of Aristotle, Galileo or Da Vinci, who endured to creatively produce what others said was impossible.	Although some traits are considered negative, it makes the person whole. Creativity skills are not just fun and joy, but can also lead to unsocial chaotic behavior, which is socially quite unaccepted. In my classroom I'm now much better able to recognize creative traits, even if there considered negative. It means I'm less prejudiced about certain behavior.
6	**Foursight: "The breakthrough Thinking Model"** Dr. G. Puccio PhD, designed a measure called Foursight to see what type creative you are. It uncovers the link between Creative Problem Solving (CPS) and individual thinking processes.	Developed in 1990-2001 by Gerard Puccio, head of the Creative Studies in Buffalo.	When working in a team it helps to understand what your Problem Solving Preferences are : When engaging in problem solving, do you gain energy from clarifying a problem, generating ideas, formulating solutions and/or putting a plan into action?	In a team, all four preferences are equally important for productive creative problem solving (and can be enhanced), ideas alone cannot move a topic forward. I know now that knowing your creative preference will make the communication in the team much easier and the project is best covered in any stage of the process.
7	**TTCT** Torrance Tests of Creative Thinking, a test of creativity, was developed to test the level of creativity by assessing the level of fluency of ideas, originality, flexibility and elaboration.	Research originated in the 1950's and was based upon Guilford's structure of Intellect Creativity test. Torrence started his development of the TTCT in the early sixties, 1966-1976.	By far the most popular creativity tests, has been translated in 34 languages, has generated well over 1000 published research studies.	Building on J.P. Guilford's work and created by Torrence this work evolved in the Kirton Adaption-Innovation Inventory. Doing this test made me realize that these differences in thinking can cause communication problems.
8	**International Centre for Studies in Creativity** (ICSC, part of State University of NY), seated in Buffalo. Co-founded in 1967 by Sid Parnes and Alex Osborne, ICSC is nowadays the first program in the world to teach the science of creativity at a graduate and masterlevel.	ICSC is part of State University of New York, until 1962 known as University of Buffalo.	As the first school to offer a Master of Science degree in Creativity, they have achieved an international reputation for scholarly research and teaching that focuses on developing creativity, leadership, decision-making and problem solving skills.	Nowadays, I encounter more and more people, educators and businesses acknowledge that professional success is linked to the ability to master creativity, to operate as a creative problem solver, and to lead change. I just read that the ability of solving problems is in the top 3 of most important skills for the future (2020), according to research by the World Economic Forum in 2016.
9	**Sidney Parnes** 1922-2013, College professor at the State University of New York, Buffalo in the field of creativity in the 40's.	Closely worked together with Alex Osborn from the fifties. Founder of Creative Education Foundation (CEF). In the early 1970s, Parnes launched the Creative Studies Project with colleague Ruth Noller. It determined that creativity could be taught and learned effectively. That insight led to the establishment of the world's first master's degree program in creativity at Buffalo State in 1975.	Parnes and Osborn developed the "Osborn-Parnes Creative Problem Solving (CPS). and helped CEF to develop a comprehensive educational program for the CEF's Creative Problem Solving Institute (CPSI), which is now the world's longest-running international creativity conference.	Parnes wrote *Sourcebook for Creative Problem Solving*, A Fifty Year Digest of Proven Innovation Processes. A mini-encyclopedia of deliberate creativity techniques published by the Creative Education Foundation. (CEF). Its a wonderful overview of creative techniques and ideas for lesson plans.

10	**Synectics** Developed by Gordon, J.J. and Prince, G.Synectics is a technique that uses the creative process perceiving common objects and ideas in new ways. "Making the strange familiar and the familiar strange". Synectics is a method and the name of a firm.	Started to investigate the way brainstorming processes took place in his firm at Arthur D. Little in the early fifties.	Important in this research is the discovery of the power of the subconscious in creativity processes. Synectics believes that people can be better at being creative if they understand how creativity works.	Synectics research has three main assumptions: -The creative process can be described and taught; -Invention processes in arts and sciences are analogous and are driven by the same "psychic" processes; -Individual and group creativity are analogous.
11	**Sir Ken Robinson** (Liverpool, 1950) is author, public speaker and advisor in the field of art and education and is especially known for his groundbreaking work as protagonist of creativity and innovation in education and business.	With his background in theater and as professor at the university of London and Warwick. In 1998 Robinson led a national commission on creativity, education and the economy for the UK Government, and his report for this project, 'All Our Futures: Creativity, Culture and Education' (The Robinson Report) was published to wide acclaim.	Advocate in the field of creativity in education. In 2003, he received a knighthood from Queen Elizabeth II for his services to the arts. Robinson was appointed by the British government to chair the National Advisory Committee on Creative and Cultural Education, the largest ever inquiry into the importance of creativity in education and the economy.	In February 2006 he gave a speech at the TED-conference in California, concerning the necessity of creativity in education, which happened to become the most watched Ted Talk ever. I personally think that's because his eloquence, his humor and the way he presents his knowledge. Everyone is interested in this subject and the facts are so obvious, it's hard to deny the importance of creativity in education.
12	**C**REATIVE **P**ROBLEM **S**OLVING, a simple repeatable deliberate method in creative thinking for groups, and individuals, to take on new challenges and come up with breakthrough ideas and solutions to all kinds of problems.	Developed by Guilford and Osborn, Torrence and Parnes later on shaped it into the four stage process as we now know it: Clarify, Ideate, Develop, Implement.	Although creativity seems a bit like magic, it's not magical at all: CPS provides the methods, rules, roles and tools to de-mystify the creative thinking process and hand it over to everyone.	With the visual model presented in 2010 by Dorte Nielsen and Sarah Thurber I think CPS became much better to understand and easier to teach and to remember. I'd like to see more models visualized with color coding like that.
13	**KAI,** Kirton Adapters-Innovators Inventory; it measures thinking styles. This research has been continued by Puccio, Treffinger and Talbot in 1995, Mudd in 1995,	Personality related test. Developed in 1976 revised till - 1999. It differs from other creativity measures by measuring style and level of creative problem solving.	Problem solving is the key of life. People differ in the cognitive styles in which the are creative, solve problems and make decisions. But they're equally important! Adapters come up with more conventional but fitting solutions, while innovators try new approaches.	Hammersmidt noted already in 1996 what I noticed in this study, that Innovators and Adapters don't speak the same language and therefore communication is difficult.

- I learned that the field is massive and widely spread, everyday I encounter new insights, people, books, articles that I can combine or implement in my daily educational practice.
- My insight is that the way you composed this course (including the homework, through TIM) is very well thought out. All the assignments are adding up to our knowledge, repeatedly presenting information in another way.
- This assignment is a present: By reading all of each others matrixes we would have a great overview of the creativity field!
- What intrigues me is: All important researchers we read about are dead, Sir Ken Robinson is the spokesman we need now! According to his views on YouTube, he is not the only one who notices the importance of creativity in education.
- What puzzles me is that the important women researchers in the field get so little attention in the media although they did a lot of important research too. Like Ruth Noller is not mentioned in Davis.