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INNOVATIVENESS AND CREATIVITY AS FACTORS IN WORKFORCE DEVELOPMENT – PERSPECTIVE OF PSYCHOLOGY

Abstract. The paper describes the concept of innovativeness and creativity from the perspective of natural ability and skills developed by the educational process, parenting style, societal values and traditions. The paper contains an analysis of innovativeness and creativity as factors of workforce development from the perspective of business psychology describing various theories of the problem.

Keywords: innovativeness, creativity, business psychology, development, workforce

1. Introduction

Intellectual property is the most valuable asset of modern enterprises. To generate profit, modern enterprises need to “work smarter not harder”. In modern economies, traditional mass production is not profitable anymore and it is being outsourced to countries with lower labor costs. Therefore, innovativeness and creativity of the workforce are more important than ever. However, the educational process does not reflect that need and does not focus on developing innovativeness and creativity. The educational process is focusing on teaching a body of knowledge prescribed by the curriculum. This is easier to accomplish if students are forced to sit, listen and not question anything. This approach discourages creativity and innovativeness. Very often the current educational system is counterproductive in developing the most important human skills and attributes which are innovativeness and creativity.

2. Innovativeness and Creativity from the Perspective of Psychology

In a modern knowledge-based economy, individuals as well as enterprises must use innovativeness and creativity to develop new ideas for products, new applications for existing products or new more advanced technologies.

When trying to gain an understanding of innovativeness and creativity, we must first look at the concept of innovativeness. Is innovativeness something we are born with or something we can learn? Does our nature or nurture play a larger role in the development or deterioration of creativity? When it is understood which has the highest impact on creativity, we may be able to find a way to promote innovativeness. If a way can be found to nurture and enhance innovativeness, we may be able to help more business start-ups to succeed in the future.

Before discussing where innovativeness comes from, a definition of its traits is necessary. Innovativeness, as defined by the Merriam-Webster Collegiate Dictionary¹, is “the skill and imagination to create new things”. To create something completely new, the businesses must use creativity. Creativity, as defined by the Merriam-Webster Collegiate Dictionary, is “the ability to form mental images of things that either are not physically present or have never been conceived or created by others”.

It is necessary to look beyond a simple definition to understand these abstract concepts. Looking at the collection of research available, it is necessary to see how others have defined “creativity” and “innovativeness”. Therefore, this section has the following goals:

- To create a definition of innovativeness and creativity;
- To create a definition that is all encompassing;
- To create a definition that gives us the best possible explanation for these abstract concepts;
- To find any similarities between the definitions;

To look at any inconsistencies between the definitions.

By looking at the various definitions of “creativity” and “innovativeness”, any attempt to define these terms should begin to look further and possibly answer some questions, such as:

- How does “creativity” influence innovativeness?
- Is “creativity” a product of nature or nurture?
- If nature, how is “creativity” innate?
- If nurture, how can “creativity” be learned?

Is “creativity” teaching already being used in educational settings?

¹ Merriam-Webster Collegiate Dictionary, 10th Ed., Springfield, MA: Merriam-Webster Incorporated, 1999.

3. Theories of Creativity and Innovation

There are various ways to define “creativity”. For the many variations, there are more similarities than differences. How these definitions are interpreted and applied is the greatest varying factor². “Creativity” is the “ability to produce work that is both novel and appropriate”³ “Innovativeness” is the “implementation of a new or significantly improved product (good, service, process, marketing method or organizational method) in business practices, workplace organization or external relations”⁴. Esquivel⁵ sees it as the critical process involved in the generation of new ideas.

Craft⁶ sees “creativity as the ability to see possibilities that other have not noticed and “innovativeness” as the “implementation of new ideas to create something of value, proven through its uptake in the marketplace. An “innovation” can be seen as “a new idea being launched on the market for the first time”⁷. “Innovativeness” can also be defined as the

² Wolniak R.: The role of QFD method in creating innovation, „Systemy Wspomagania Inżynierii Produkcji”, z. 3, 2016, s. 127-134; Wolniak R.: Relationship between selected lean management tools and innovations, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 75, 2014, s. 157-266; Wolniak R., Skotnicka-Zasadzień B.: The use of value stream mapping to introduction of organizational innovation in industry, „Metalurgia”, vol 53., iss. 4, 2014, s. 709-712; Wolniak R.: Innovation in the context of economic situation in the EU countries, „Zeszyty Naukowe Akademia Morska w Szczecinie”, nr 24 2010, s.141-147; Wolniak R., Sędek A.: Using QFD method for the ecological designing of products and services, “Quality and Quantity”, vol 43, nr 4, 2009, s. 695-701.

³ Sternberg, R. J., & Lubart, T. I., The Concept of Creativity: Prospects and Paradigm, In R.J. Sternberg (Ed.), *Handbook of Creativity*, Cambridge: Cambridge University Press, 1999, pp. 3-15.

⁴ Oslo Manual. Guidelines for Collecting and Interpreting Innovation Data, OECD, 2005.

⁵ Esquivel, G. B. (1995). Teacher Behaviours that Foster Creativity. *Educational Psychology Review*, vol.7, no.2, pp. 185-202.

⁶ Craft, A., *Creativity in Schools: Tensions and Dilemmas*, London: Routledge, 2005.

⁷ Knop L., Olko S.: Cooperation in clusters and networks - creativity and innovativeness challenges: an introduction, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 109, 2017, s. 5-7; Pichlak M.: Innowacje ekologiczne jako źródło przewagi konkurencyjnej przedsiębiorstw, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 102, 2017, s. 303-317; Przybylska E.: Potencjalne źródła innowacji w branży TSL, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 101, 2017, s. 401-410; Olko S.: The impact of the networks and clusters in cultural and creative industries on regional innovation ecosystem - analysis of the selected cases in Europe, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 109, 2017, s. 25-42; Osika G.: Innowacje społeczne jako wsparcie dla inteligentnych specjalizacji - uwarunkowania komunikacyjne, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 95, 2016, s. 369-381; Kozubek R.: Innowacje społecznie odpowiedzialne a kompetencje miękkie pracowników przedsiębiorstwa, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 95, 2016, s. 225-236; Pichlak M.: Innowacyjność nowych produktów - ujęcie wielowymiarowe, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 89, 2016, s. 397-407; Michalak A.: Inteligentna specjalizacja jako koncepcja wdrażania polityki inteligentnego rozwoju, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 96, 2016, s. 123-132; Kochmańska A.: Kompetencje miękkie w innowacyjnym przedsiębiorstwie, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 95, 2016, s. 189-199; Szwajca D.: Macierz aspiracji innowacyjnych jako narzędzie zarządzania portfelem innowacji w przedsiębiorstwie, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 95, 2016, s. 322-333; Dolińska-Weryńska D., Weryński P.: Percepcja innowacji wśród przedsiębiorców z sektora MŚP w województwie śląskim, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 95, 2016, s. 103-117; Knop L., Brzóska J.: Rola innowacji w tworzeniu wartości przez modele biznesu, *Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie*, z 99, 2016, s. 213-232; Jonek-Kowalska I.: The sources of risk in the process of implementing technological innovations, w: *Mezinárodní Masarykova konference pro doktorandy a mladé vědecké pracovníky. MMK 2011. Sborník*

“intentional introduction and application within a job⁸, work team, or organization of ideas, processes, products, or procedures that are new to that job, work team or organization and that are designed to benefit the job, work team or organization”⁹.

In business, there is a tendency to use the word "innovativeness" to describe “creativity” as specificity of the process for creating something new¹⁰. The study of the mind is very important when looking at the understanding of “creativity”.

The following are the areas of focus within this research¹¹,

- Psychometric approach.
- Psychoanalytic approach.
- Self-expression and mystical approach.
- End-product approach.
- Cognitive approach.

4. Psychoanalytic Approach

The psychoanalytic approach, created by Sigmund Freud, looks at “creativity” as the external manifestation of “unconscious”. The unconscious is the part of the mind of which the person is not aware. The unconscious is also the most truthful part of who we are. Often it is a place of hiding our deepest desires. There is a conflict between our conscious and unconscious processes where “creativity” can be a result. “Creativity” can be seen in the psychoanalytic approach through art.

Art can be looked at as the way that we can tap into our unconscious which is much like other methods of psychoanalysis¹². In the psychoanalytic approach, we see the term "creative sparkle"¹³ being used to describe this art of the unconscious.

Príspevků, Hradec Králové, Česká republika 12.-16.12.2011. [Dokument elektroniczny]. Hradec Kralove : Magnanimitas, 2011, s. 280-290; Jonek-Kowalska I.: Współdziałanie w formie aliansu strategicznego jako metoda wspierania działalności innowacyjnej, Zeszyty Naukowe Politechniki Śląskiej. Seria Organizacja i Zarządzanie, z 55, 2011, s. 81-95.

⁸ Olkiewicz M., Bober B., Wolniak R.: Innowacje w przemyśle farmaceutycznym jako determinanta procesu kształtowania jakości życia, „Przegląd Chemiczny”, nr. 11, 2017, s. 2199-2201; Wolniak R.: Analiza relacji pomiędzy wskaźnikiem innowacyjności a nasyceniem kraju certyfikatami ISO 9001, ISO 14001 oraz ISO / TS 16949, Kwartalnik Organizacja i Kierowanie, nr 2, 2017, s. 139-150; Krzemień E., Wolniak R.: Innowacyjność polskiej gospodarki na tle krajów Unii Europejskiej, „Kwartalnik Organizacja i Zarządzanie”, nr 4, 2016, s. 155-165; Wolniak R.: Metody i narzędzia Lean Production i ich rola w kształtowaniu innowacji w przemyśle, [w:] monografii „Innowacje w zarządzaniu i inżynierii produkcji” [red:] R. Knosala, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole 2013, s. 524-534.

⁹ West, M. A., & Richards, T. (1999). Innovation. In M. A. Runco & S. R. Pritzker (Eds.), *Encyclopedia of Creativity* (pp. 45-56). San Diego, Calif.; London: Academic, 1999, pp. 45-56.

¹⁰ Wolniak R.: The Design Thinking method and its stages, „Systemy Wspomagania Inżynierii Produkcji”, z. 6, 2017, s. 247-255.

¹¹ Guilford, J.P., Creativity, *American Psychologist*, vol. 5, 1950, pp. 444-454.

¹² Torrance, E. P., *Torrance Tests of Creative Thinking*, Lexington, MA: Personnel Press, 1974.

That moment of insight¹⁴ is often related to the following:

- Day-dreaming
- Pre-dreaming
- Drugs
- Mental illnesses.

5. Self-expression and Mystical Approaches

The self-expression and mystical approach views of “creativity” are the needs to express oneself and do so in ways which are different from those around them. At its core, the self-expression and mystical approaches are based on the need to be different. In the past these approaches were apparent in beliefs that talent (creativity) was a direct gift from an otherworldly entity, “divine inspiration”¹⁵. These approaches¹⁶ do not use science, but rather the following:

- Common assumptions.
- Implicit theories.
- Connotations.

These criteria limit the approach focusing on “creativity” as being mainly applied to the arts. The mystical nature cannot be studied and therefore it cannot be used to define creativity in a standard way¹⁷.

Though the self-expression and mystical approaches seem like outdated concepts, it must be kept in mind that they are still the most prevalent views today. When individuals casually discuss creativity, or label an individual or work as creative, most of the time they are referring to art of some kind. This greatly limits the definition of creativity. Perceptions as to what can and cannot be creative are impacted by this non-professional view of the world.

¹³ Eigen, M. (1983). A Note on the Structure of Freud's Theory of Creativity, *Psychoanalytic Review* vol. 70, no. 1, 1983, pp. 41-45.

¹⁴ Heilman, K. M., Nadeau, S. E., & Beversdorf, D. O. (2003). Creative Innovation: Possible Brain Mechanisms, *Neurocase*, vol. 9, no. 5, 2003, pp. 369-379.

¹⁵ Sternberg, R. J., & Lubart, T. I., The Concept of Creativity: Prospects and Paradigm, In R.J. Sternberg (Ed.), *Handbook of Creativity*, Cambridge: Cambridge University Press, 1999, pp. 3-15.

¹⁶ Runco, M.A., Implicit Theories, In M.A. Runco& S.R. Pritzker (Eds.), *Encyclopedia of Creativity*, vol. 2, 1999, pp. 27-30.

¹⁷ Runco, M.A., Implicit Theories, In M.A. Runco& S.R. Pritzker (Eds.), *Encyclopedia of Creativity*, vol. 2, 1999, pp. 27-30.

6. End product Approaches

The end-product approach defines “creativity” as the road to a result. Theories of Creativity and Handbook of Creativity state that “creativity” leads to creations¹⁸. This approach is also heavily tied into the arts. This approach looks at the creative process as necessary to create a product. That is not to say that all creations are creative¹⁹.

7. Cognitive Approaches

The cognitive approach is currently very popular in the psychological community²⁰. This is the same when looking at creativity. There have been many different theories within the cognitive approach that may help explain creativity. The cognitive approach is one that can be scientifically studied. It is in stark contrast to the random or divine approaches. Therefore, the cognitive approach has more credibility. By this approach, “creativity” is a cognitive process. It is a skill that can be learned and honed with practice. The cognitive approach views creativity as a way of thinking. The cognitive approach seeks to understand the cognitive processes²¹.

The cognitive process of creativity is seen by some researchers as being phase-oriented. This means that creativity is not simply happening at one time, but creativity is a process that is built over time.

The '10-year rule' is the claim that if an individual has ten years of experience, they can be more creative. This ties into the idea that a person must have knowledge of the problem/topic to be effectively creative with the information²².

Creativity has a cultural aspect also. The word, creativity, and the skill of being creative can be looked at differently depending on the culture. This exacerbates the difficulty in finding a definition. There is, however, a shift due to cultures. The Western idea of creativity is looked at as being something of a gift, often time associated with the mystical.

The Eastern view focuses on the group’s recreation and betterment. For both culture, there is a change seen²³.

¹⁸ Sharp, C., Developing Young Children's Creativity: What Can We Learn from Research? Topic, vol. 32, 2004, pp. 5-12.

¹⁹ Albert, R. S. & Runco, M. A. (1990). Theories of creativity. Newbury Park; London: Sage Publications, 1999.

²⁰ Taylor, C. W., Various Approaches to and Definitions of Creativity. In R. Sternberg (Ed.), The Nature of Creativity: Contemporary Psychological Perspectives, New York: Cambridge University Press, 1988, pp. 99-121.

²¹ Sternberg, R. J. & Lubart, T. I., The Concept of Creativity: Prospects and Paradigms. In R. J. Sternberg (Ed.), Handbook of Creativity, Cambridge: Cambridge University Press, 1999, pp. 3-15.

²² ¹⁸Expert Group Report: Innovation and Creativity in Education and Training in the EU Member States Fostering Creative Learning and Supporting Innovative Teaching and Rethinking Education, 2012.

What is success?

Eastern view => Effort, process

Western view => Innate quality²⁴

Economy²⁵ may also foster creativity. Individuals who are creative seem drawn to well-prospering cities. To keep these individuals or attract creativity, the economy must be prospering.

Three T's that attract creative individuals are as follows:

- Technology.
- Talent.
- Tolerance.

The location needs to be tolerant of individual differences. This creates a freedom and acceptance for people to feel safe. Other talented individuals need to be present, so that creative individuals can interact with like-minded people. Lastly, there needs to be some type of technology. New technologies are resources for creativity to continue creating²⁶.

The Geneplore Model²⁷ breaks this process down into two phases:

- Generative phase.
- Exploratory phase.

The generative phase begins with the creation of an idea, that is thoughts regarding the program or situation. The exploratory phase is the interpretation of these ideas, that is thinking deeper into the initial thoughts. If an outcome is not reached, the individual can return to the generative phase to reevaluate the information.

Another theory of creativity is the Wallas Theory²⁸. Wallas Theory breaks down the creative process into four phases as follows:

- Preparation.
- Incubation.
- Illumination.
- Verification.

Preparation is the phase in which the problem is identified. Incubation is the phase of thinking about the problem. Illumination is the phase in which creativity begins. The last phase, verification, is where the idea is shared and receives feedback.

²³ Lubart, T. I., Creativity Across Cultures. In R. J. Sternberg (Ed.), *Handbook of Creativity*, Cambridge: Cambridge University Press, 1999, pp. 339-350.

²⁴ Gardner, H., *Frames of Mind: The Theory of Multiple Intelligences*, London: Heinemann, 1984.

²⁵ Florida, R. L., *The Rise of the Creative Class and How It's Transforming Work, Leisure, Community and Everyday Life*, New York: Basic Books, 2002.

²⁶ Albert, R. S., & Runco, M. A., *Theories of Creativity*. Newbury Park; London: Sage Publications, 1990.

²⁷ Finke, R. A., Ward, T. B., & Smith, S. M. (1992). *Creative Cognition: Theory, Research and Applications*: MIT press Cambridge, MA, 1992.

²⁸ Wallas, G., *The Art of Thought*, New York: Harcourt Brace and World, 1926.

In a study of seven hundred inventors, a collection of seven phases was created as follows:²⁹

- Observation of a need.
- Analysis of the need.
- Survey of all available information.
- Formulation of all objective solutions .
- Critical analysis of these solutions.
- Birth of the new idea.
- Experimentation to test, develop and refine the solution.

These seven phases work alongside the abstract and concrete. It can be helpful to look at the opinions of those who are working within the field. The elements and attributes necessary to be innovative and creative in the opinion of the inventors can be divided into eight categories as follows:³⁰

- Intellectual abilities.
- Creative or synthetic.
- Analytic skills.
- Practical contextual skills.
- Knowledge.
- Specific styles of thinking.
- Personality.
- Motivation.

Creative individuals may also gravitate to unpopular ideas. Investment Theory of Creativity³¹ explains just this. Individuals gravitate to unpopular ideas and through creativity build them up into something successful. This is not to say that all creativity is focused on something uncommon or unpopular. Innovations can be created with topics of high interest to many. Unpopular ideas hold the most room for growth as not many individuals have looked at them and they can be given a fresh look or updated.

Russ³² assumes that creativity is manifested in the interplay of personal traits, emotional or affective processes and cognitive abilities.

The Social-Personality Approach³³ was developed to complement the cognitive approach. It is interesting to note that those in the innovativeness tent are looked at as cold, “not nice”.

²⁹ Rossman, J., *The Psychology of the Inventor*. Washington DC: Inventor's Publishing, 1931.

³⁰ Sternberg, R. J., & Lubart, T. I., *The Concept of Creativity: Prospects and Paradigms*, In R. J. Sternberg (Ed.), *Handbook of Creativity*, Cambridge: Cambridge University Press, 1999, pp.3-15.

³¹ Sternberg, R. J., & Lubart, T. I., *Investing in Creativity*, *Psychological Inquiry*, vol. 4, no. 3, 1993, pp. 229 – 232.

³² Russ, S., *Development of Creative Process in Children*, *New Directions for Child Development*, vol. 72, 1996, pp, 31-42.

³³ Sternberg, R. J., & Lubart, T. I., *The Concept of Creativity: Prospects and Paradigms*, In R. J. Sternberg (Ed.), *Handbook of Creativity*, Cambridge: Cambridge University Press, 1999, pp.3-15.

If being perceived as nice is agreeing with the group, then creative people are “not nice”³⁴. This is the perception of those looking at how the creative person operates socially.

Gardner³⁵, on the other hand, looks at creative individuals a little bit differently. Creative people are as follows:

- Self-confident.
- Ambitious.
- Passionate about their work.
- Have a tough skin.

The Social-Personality Approach does have similarities with the cognitive approach. There are social interactions which can be perceived as the personality of the person in both approaches. Self-confidence as defined by Gardner can be looked at as harsh, uncaring and “not nice” in both approaches.

8. Conclusions

Innovativeness and creativity are not equally important in all enterprises and professions. In some professions like engineering, education, business, management, politics, economics, art, etc., innovativeness and creativity are the driving forces for success. The training for those positions needs to promote the development of innovative and creative skills and attributes.

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³⁴ Ng, A.-K., & Smith, I., Why is There a Paradox in Promoting Creativity in the Asian Classroom? In S. Lau, A. N.N. Hui & G.Y.C. Ng (Eds.), *Creativity: When East Meets West*, World Scientific Publishing Company, 2004, pp.87-112.

³⁵ Gardner, H., *Frames of Mind: The Theory of Multiple Intelligences*, London: Heinemann, 1984.

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