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# **THE POTENTIAL OF CURRICULUM 2013 IN IMPROVING CRITICAL THINKING SKILLS AND ENTREPRENEURSHIP COMPETENCY: CASE STUDY IN INDONESIA**

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## **ABSTRACT**

*This paper aims to provide an analysis/review of critical thinking and entrepreneurship competence. The indicator of critical thinking skills in research refers to Watson-Glaser. Research methods use the literature review. Critical thinking skills are associated with entrepreneurship competence on the risk of organizing, opportunities, self-satisfaction, and freedom aspects. The results of this research are expected to be a reference for teachers in the school to be able to provide learning activities that can accommodate both aspects.*

**Keywords:** Critical Thinking Skills, Entrepreneurship Competency, Curriculum 2013 in Indonesia.

## **INTRODUCTION**

Natural science is one of the important subjects that teach at school (Akram et al., 2013). The aim of science education is to make student that are able to master the science process skills (Aktamis & Ergin, 2008; Harlen, 1999; Huppert et al., 2002) and to teach students how to be involved in investigations (Zeidan & Jayosi, 2015). According to Bybee (1994), there are many reasons for students to talk about science. Some of them are: 1) the development of personal and social competencies, 2) experience in looking for facts and scientific principles, and 3) Learn the theory and practice of scientific methods (Bybee, 1994). In others words, the student must have integrated competencies by skills, knowledge, and attitude to increase their understanding about scientific concept (Suhendi et al., 2018).

Critical thinking skill is important aspect which must have by the student. To practice the critical thinking skills, it is needed learning models that were validated. In this case, learning model has function as guided or blue print to teach in the class (Marzano, 2001). Moreover, learning model is also as conceptual framework that describes and illustrates learning activity with systematic. Specifically, learning model is defined as systematic syntax to achieve the purpose of the learning, and it has function as guide for the teacher (Sagala, 2010).

Learning process that expected is increasing the critical thinking skill. It is the learning process that makes the student to find the concept, knowledge, individually. To find the conceptual knowledge individually is increased by investigation. This activity contains in

discovery learning model (Fios, 2013). In K-13 curriculum, discovery learning model set as one of the learning model which can increase the critical thinking skills (Kementerian Pendidikan dan Kebudayaan, 2013). In the other hand, the learning process is not only to teach the student about theory. Moreover, the learning process must prepare the student to survive in globalizations era. As is well known, the student will compete with not human only and limited natural resources. So, after graduate the school, the student must have the competences of entrepreneur too. Nevertheless, it can't to found any sources and discussion that explain in holistic and specific about correlation of critical-entrepreneur thinking with discovery learning. Therefore, this paper aims to identify the correlation of critical thinking skill (as the basic skill to live) and entrepreneur competences (basic competences to survive) in learning process. From this paper, the researchers want to give an overview of the critical-entrepreneur aspects that can be built based on the curriculum 2013.

## MATERIAL AND METHOD

The research uses analytical qualitative method from any sources. The main sources in this research are literature and research study of critical-thinking skills and entrepreneur competences. The literature used is sourced from the results of related studies specifically describing the education system in Indonesia. Study on curriculum 2013 refer to the laws and regulations regarding the education system in Indonesia (Kementerian Pendidikan dan Kebudayaan, 2013) and study on critical thinking skills refer to indicators of critical thinking skills by Watson-Glaser and related research of entrepreneurship in educational system.

## RESULT AND DISCUSSION

### Critical Thinking Skills

Critical thinking skill has been one of important competences that teach on the school in al lot of country in the world. Educational practitioners believe that critical thinking skills are having important roles for someone to survive and compete. In the disruption era especially in technology and information, the critical thinking skills become a priority to have by the students (Kong, 2006). This is in accordance with the challenge of 21st century which needs the problem solving ability, and one of the basic skills to have the problem-solving ability is critical thinking skills.

Critical thinking skills are important for every individual to live, work, and function effectively in society. Almost all professions ranging from education, engineering, management, medical, finance, politics to law require critical thinking skills. The reason is because clear and rational minds are needed to solve problems systematically. In addition, the emergence of challenges in the form of human competition with machines, robots, to artificial intelligence that greatly affects students' sensitivity to their environment.

Critical thinking skills have a basic foundation in the form of scientific methods. The scientific method in principle is a series of processes that are described in a series of activities through a scientific approach. Therefore, the provision of critical thinking skills can be done by applying a scientific approach in a comprehensive and sustainable manner. There are five components in a scientific approach that are observing, asking, discovering, concluding and communicating (Supriadi et al., 2020). In every component of the scientific approach, there is a critical thinking aspect that when it is trained properly and sustainably, so it can be predicted that

students will have critical thinking skills very well. In addition, critical thinking skills also have a foundation of thinking that is logical and empirical. It is logically in unsalted with the mindset of thought-thinking and coherent truths that have yet to produce a final conclusion (hypothesis). While empirical is indicated by the inductive thinking pattern and correctness of correspondence that results in generalization (Lai, 2011; McPeck, 1984).

Many opinions say about indicators of critical thinking skills. One of them is Watson-Glaser in a form of instrument test by The Watson-Glaser Critical Thinking Appraisal (WGCTA) (Danaryanti & Lestari, 2018; Hendriani & Septarini, 2016). There are five indicators of the critical thinking skills expressed by Watson, namely Inference, Recognition Assumptions, Deduction, Interpretation, and Evaluation of Arguments (Fazriyah et al., 2018; Sternod & French, 2016).

## **Entrepreneurs Competencies**

The challenges faced by every student are not in the school environment alone. Further than that is how the student can survive in global competition. To do this, one of them is to equip students with entrepreneurship competence. Entrepreneurship competence can be developed through proper learning model. In addition, implementation efforts are also a key to this process considering that entrepreneurship is not knowledge, but also practice skills.

Entrepreneurship is a process done by an entrepreneur to produce impact in the form of enterprise (Ismail et al., 2015; Jati, 2016). Entrepreneurs has at least two skills, a) make something different by having a component of creativity and innovation, b) organizing, taking risk, yield-orientation, opportunities, personal satisfaction, and freedom with taking-risk (Fernández-Salineroa & de la Riva, 2014). Equip students with entrepreneurship competence can be done by integrating in learning process (Erkoç & Kert, 2013; Kyndt & Baert, 2015). Some previous studies found the correlation of integration results based on several aspects such as problem solving, creativity, critical thinking, innovation, persistence, risk-taking, and open-mindedness (Heilbrunn, 2010; Ismail et al., 2015; Polat, 2018)

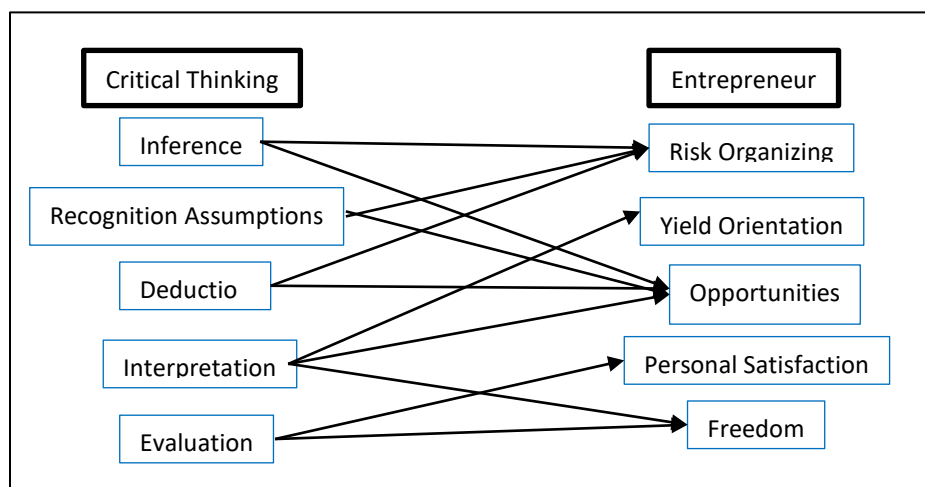
## **Relevance of Critical Thinking Skills with Entrepreneur Competence in Learning Process**

Discovery learning is generally assessed to provide positive results in terms of improving critical thinking skills. Many research results show increased critical thinking skills through the adoption of discovery learning-based learning (Cooper, 1995; Facione, 1990; Kwan & Wong, 2015; Smitha, 2012). Simultaneously, some components and aspects of critical thinking skills have an association with entrepreneurship competence.

The supply of Entrepreneurship competency aspects integrated with critical thinking skills is relatively new. Previous research that has been done is showing positive results in building entrepreneurship competence by integrating with creative thinking skills (Atmojo et al., 2019; Atmojo et al., 2019). The invention stated that to produce a new product and meet the needs of the market, creative thinking skills are required.

In addition to creative thinking skills, critical thinking skills also have their own contributions in provide provisions of the students of entrepreneurship competence. Critical thinking skills emphasize to students to think logically and empirically. If analyzed in more detail, both foundations think this refers to the effort of adaptation and problem solving which is much related to entrepreneurship competence.

Referring to the indicator of critical thinking skills expressed by Watson-Glaser, many points that lead to the competency indicators of entrepreneurship are simply demonstrated in relation to Figure 1.



**FIGURE 1**  
**SKILL RELATION**

Inference has the defendant as the ability to assess the level of probability of accuracy/correctness based on available information. This indicator will indirectly give students the experience to be able to risk organizing and take advantage of the opportunities as well as possible. The assumptions recognition indicator is the ability to identify assumptions implied in a statement. Next is deduction which is ability in determining whether conclusions are created logically based on available information? This indicator is certainly very closely related to risk organizing and opportunities. Interpretation is the ability to assess evidence and make decisions about whether generalization/conclusions generated are guaranteed based on the available data. The latter is an evaluation that is an ability to evaluate the strengths and relevance of an argument in relation to a particular issue or problem. Evaluation is much related to personal branding and it is indispensable in entrepreneurship.

In regards to learning discovery learning, the entrepreneurship aspect can be inserted into critical thinking skills. So, in the process of learning the teacher can equip the students with two important things simultaneously. The form of implementation that can be done by the teacher is to familiarize learning that the aspect of productivity (Abualbasal & Badran, 2019), Provide opportunities to build and develop ideas (Mutalimov et al., 2020), to learning that emphasizes on the originality aspect and to underestimate the level of student confidence through the development of independent websites (Kremer et al., 2017). Generally, the supply that needs to be trained is not limited to the skill aspect only. Simultaneously, the mental and caring aspects are also the key to success.

## CONCLUSION

Discovery learning has many aspects that can be dug. The critical-entrepreneur aspect is one aspect that can be developed concurrently through learning discovery Learning. Entrepreneur indicators that can be integrated in indicators of critical thinking skills cover risk-organizing, opportunities, personal satisfaction, and freedom. These aspects of supply can be

performed learning that emphasize the development of conceptual ideas, confidence, and productivity.

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## REFERENCES

- Abualbasal, A.M., & Badran, R.E. (2019). From Course Project to Entrepreneurship: The Case of Engineering Students at Princess Sumaya University for Technology. *Journal of Entrepreneurship Education*, 22(5), 1-14.
- Akram, B., Mehboob, R., Ajaz, A., & Bashir, R. (2013). Scientific Concepts of hearing and deaf students of grade VIII. *Journal of Elementary education*, 23(1), 1-12.
- Aktamis, H., & Ergin, Ö. (2008). The effect of scientific process skills education on students' scientific creativity, science attitudes and academic achievements. In *Asia-Pacific forum on science learning and teaching*, 9(1), 1-21.
- Atmojo, I.R.W., Sajidan, S.S., Sunarno, W.S., & Ashadi, A.A. (2019). Improving the Entrepreneurship Competence of Pre-Service Elementary Teachers on Professional Education Program through the Skills of Disruptive Innovators. *Elementary Education Online*, 18(3), 1186-1194.
- Atmojo, I.R.W., Sajidan, S., Sunarno, W., & Ashadi, A. (2019). Improving students' creative-thinking skills in biotechnology using creativity-learning based discovery skill (Cel-Badis) model. In *Journal of Physics: Conference Series*, 1318(1), 012108.
- Bybee, R.W. (1994). Research on goals for the science curriculum. *Handbook of research on science teaching and learning*, 357-387.
- Cooper, J.L. (1995). Cooperative learning and critical thinking. *Teaching of psychology*, 22(1), 7-9.
- Danaryanti, A., & Lestari, A.T. (2018). Analisis kemampuan berpikir kritis dalam matematika mengacu pada watson-glaser critical thinking appraisal pada siswa kelas VIII SMP negeri di banjarmasin tengah tahun pelajaran 2016/2017. *EDU-MAT: Jurnal Pendidikan Matematika*, 5(2), 116-126.
- Erkoç, M.F., & Kert, S.B. (2013). A Comparative Study on Entrepreneurship Tendencies and Individual Innovativeness Perceptions of Pre-Service Teachers. *International Journal of Social Sciences & Education*, 3(4), 1085-1097.
- Facione, P. (1990). Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction (The Delphi Report).
- Hendriani, W., & Septarini, B.G. (2016). Pengembangan tes berpikir kritis dengan pendekatan item response theory. *Jurnal Penelitian dan Evaluasi Pendidikan*, 20(1), 45-55.
- Fazriyah, N., Supriyati, Y., & Rahayu, W. (2018). Watson-Glaser's Critical Thinking Skills Watson-Glaser's Critical Thinking Skills. In *2nd International Conference on Statistics, Mathematics, Teaching, and Research*, 1-6.
- Fernández-Salinerroa, C., & de la Rivaa, B. (2014). Entrepreneurial mentality and culture of entrepreneurship (Mentalidad emprendedora y cultura del emprendimiento). *Procedia-Social and Behavioral Sciences*, 139, 137-143.
- Fios, F. (2013). *Pengantar filsafat ilmu dan logika*. Jakarta: Salemba Humanika.
- Harlen, W. (1999). Purposes and procedures for assessing science process skills. *Assessment in Education: principles, policy & practice*, 6(1), 129-144.
- Heilbrunn, S. (2010). Advancing entrepreneurship in an elementary school: A case study. *International Education Studies*, 3(2), 174-184.
- Huppert, J., Lomask, S.M., & Lazarowitz, R. (2002). Computer simulations in the high school: Students' cognitive stages, science process skills and academic achievement in microbiology. *International Journal of Science Education*, 24(8), 803-821.
- Ismail, V.Y., Zain, E., & Zuliher. (2015). The Portrait of Entrepreneurial Competence on Student Entrepreneurs. *Procedia - Social and Behavioral Sciences*, 169, 178-188.
- Jati, B.M.E. (2016). Kewirausahaan: Technopreneurship untuk mahasiswa ilmu-ilmu eksakta.

- Kebudayaan, K.P. (2013). Materi Pelatihan Guru Implementasi Kurikulum 2013. Nuh, M.(2013). *Kurikulum*.
- Kong, S.L. (2006). Effects of a cognitive-infusion intervention on critical thinking skills and dispositions of pre-service teachers.
- Kremer, F., Jouison, E., & Verstraete, T. (2017). Learning and teaching the business model: the contribution of a specific and dedicated web application. *Journal of Entrepreneurship Education*, 20(2), 1-14.
- Kyndt, E., & Baert, H. (2015). Entrepreneurial competencies: Assessment and predictive value for entrepreneurship. *Journal of Vocational Behavior*, 90, 13-25.
- Kwan, Y.W., & Wong, A.F. (2015). Effects of the constructivist learning environment on students' critical thinking ability: Cognitive and motivational variables as mediators. *International Journal of Educational Research*, 70, 68-79.
- Lai, E.R. (2011). Critical thinking: A literature review. *Pearson's Research Reports*, 6, 40-41.
- Marzano, R.J. (2001). *Designing a New Taxonomy of Educational Objectives. Experts in Assessment*. Corwin Press.
- McPeck, J. (1984). The evaluation of critical thinking programs: Dangers and dogmas. *Informal Logic*, 6(2).
- Mutalimov, V., Volkovitckaia, G., Buymov, A., Syzdykov, S., & Stepanova, D. (2020). Entrepreneurship education: Start-up as a tool for actualizing student's professional competencies. *Journal of Entrepreneurship Education*, 23(1), 1-13.
- Polat, H. (2018). Analyzing Entrepreneurship Skill Levels of the 3rd Grade Primary School Students in Life Sciences Course Based on Different Variables. *International Education Studies*, 11(4), 63-73.
- Sagala, S. (2010). Konsep dan makna pembelajaran. *Bandung: alfabeta*.
- Smitha, V. P. (2012). *Inquiry training model and guided discovery learning for fostering critical thinking and scientific attitude*. Lulu. com.
- Sternod, L., & French, B. (2016). Test Review: Watson, G., & Glaser, E. M. (2010). Watson-GlaserTM II Critical Thinking Appraisal. *Journal of Psychoeducational Assessment*, 34(6), 607-611.
- Suhendi, H., Mulhayatiah, D., & Zakwandi, R. (2018). Effect of dynamics rotation worksheet on student critical thinking skills reviewed from IQ score. *Scientiae Educatia: Jurnal Pendidikan Sains*, 7(1).
- Supriadi, S., Suparno, S., Giatman, M., & Edidas, E. (2020). Teaching Material Development Oriented On The Saintific Approach of 5m In Learning Automotive Basic Technology. *Jurnal Pendidikan Teknologi Kejuruan*, 3(1), 55-59.
- Zeidan, A.H., & Jayosi, M.R. (2015). Science Process Skills and Attitudes toward Science among Palestinian Secondary School Students. *World journal of Education*, 5(1), 13-24.