

Has our World Changed? Demystifying Entrepreneurship Thinking as a Way-out in a Risky Society

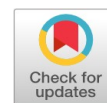
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Abstract: In order to enhance the responsiveness of the current generation, this project approached a total of 180 Hong Kong undergraduates from the Technical Education and Vocational Training (TVET) domain to receive training in Computational Thinking between February and November in 2019. Critical thinking has a long tradition in influencing the training of professional studies at different levels, including undergraduate programs, post-graduate programs, and even qualifying training. When the promotion of critical thinking has become a compulsory module for primary and secondary schools in some regions, how Hong Kong can avoid falling behind has become an irreversible topic among scholars and all walks of life. Undergraduates in this pilot study were engaged with their projects on entrepreneurship. The results showed that applications and practices of critical thinking had fostered the responsiveness of the involved undergraduates. They have also reached a significant improvement in the effectiveness of project management. This pilot study has confirmed that critical thinking is a way to solve specific problems, as well as a timeless, transferable skill that enables an individual to think more clearly and logically.

Keywords: Critical thinking, Hong Kong, TVET, Risk society, Uncertainty, Responsiveness

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INTRODUCTION

Think about the COVID-19 pandemic crisis, the whole world has gone through the crisis for almost a year. By the end of September 2020, up to 40 million people have infected COVID-19. The new data and information of COVID-19 are available, yet the impacts of COVID-19 on our daily practices remain uncertain. It is very concerning that there has been a repeated increase in the number of confirmed cases from time to time. Obviously, uncertainty remains around nearly most of the available parameter values. Somehow, such a development reflects the fact that the pandemic is yet to be over all over the world. Very likely, the epidemic situation will continue to fluctuate in the future. More likely, certain domains, such as education and especially higher education should be prepared to adapt to the new normal by switching to different learning modes in a flexible manner to sustain the learning experience of the students. In this circumstance, the experience of a pilot study regarding the enhancement and implication of critical thinking can be regarded as a perfect match with the current situation. How does the promotion of critical thinking can help learners tackle with insight the personal, societal, and value challenges as they grow up has become a key question for the educators in the era. As said, there is a need to make an earlier preparation regarding the possible changes and practical demands of the new teaching and learning environment. Thus, the application of critical thinking can make the learners be well equipped with an important foundation through developing skills in practices.

For [Czerkawski and Lyman \(2015\)](#), critical thinking has been in academic discourse for decades but gained new currency in the era. Today, critical thinking becomes an essence in different domains and fosters the betterment of almost every field of endeavor as there is a commonly held belief that

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critical thinking is influencing research in nearly all disciplines, both in the sciences and the humanities. This paper documents the design, experience, and evaluation of a total of 180 students from professional degrees in Hong Kong. The results showed that after the application and practices of critical thinking, the involved students have enhanced their content knowledge in specific topics. critical thinking as a key competence across all disciplines, professions, and throughout society has provided a rich context for the enhancement of expressive creativity and evaluative power of the ideas among the learners. Embedding critical thinking is about recognition of existing practices in what ways can match with the real need. Approaches to stay vigilant and fight COVID-19 together, as said, has become an inevitable path in the era. True to tell, even without the emergence of COVID-19, there is a new trend regarding continuing professional development among different industries. The emergence, thus, can be regarded as a platform to embrace teaching innovation in which to fit with the diverse preferences and life circumstances in the new era.

The present study aims to explore the possible impacts of critical thinking whether it can lead the undergraduates to have the betterment of their organization capability and presentation skills in the preparation of their assignments. BY the end of the study, more than half of the participants considered that the implementation of critical thinking can bring along with positive impact to their learning experience. To certain extent, as [Liu, Cheng, and Huang \(2011\)](#) mentioned that critical thinking can enhance motivation of the learners and provide an alternative learning experience that is not available in the traditional learning environment. The present study recruited a total of one hundred eighty TVET students to examine the function of critical thinking and the enhancement towards problem-solving competence by the learned skills. A total of one hundred eighty students completed the questionnaires.

The present study covered the design, experience, and evaluation of a total of one hundred eighty TVET students from a Self-finance Institute in Hong Kong. The results showed that after the application and practices of critical thinking, the involved students have enhanced their content knowledge in specific topics and felt greater confidence in their professions.

LITERATURE REVIEW

For [Schraagen and van de Ven \(2008\)](#), critical thinking is workable for the decision-making process in crisis response. The promotion of critical thinking which, from their point of view, may be able to encourage the new generation to evaluate and consider their actions and reactions in a logical way. Meanwhile, [Liu et al. \(2011\)](#) view critical thinking as an effective to transform anxious learning experiences into flow experiences. For [Wing \(2006\)](#), critical thinking can be regarded as a core skill for everyone, not only limited to computer scientists. Needless to say, determining the levels of students in higher education is important in terms of establishing the methods of education that should be used. Such a practice is essential for the current rapidly changing socio-economic and political environment. Critical thinking is a learned skill that requires guidance and practice for problem-solving ([Snyder & Snyder, 2008](#)). critical thinking is a timeless, transferable skill that enables an individual to think more clearly and logically, as well as a way to solve specific problems. With these backgrounds, no wonder there is a commonly held belief that critical thinking is influencing research in nearly all disciplines, both in the sciences and the humanities. Actually, critical thinking has a long tradition in influencing the training of professional studies on different levels which affect their undergraduate programs, post-graduate programs, and even qualifying training. When the promotion of critical thinking has become a compulsory module for primary school and secondary schools in certain regions, how Hong Kong can avoid falling behind has become an irreversible topic among not only scholars but also all walks of life.

[Tezduyar \(2001\)](#) gives a very positive comment on the practice of critical thinking as he considers that the notion of critical thinking works for extending specific solution techniques to multi-scale platforms. With these backgrounds, the present study has recruited a total of 180 TVETs as the subjects to examine the function and influence of critical thinking in what ways can equip the tertiary students with timely knowledge to face the rapidly changing environment. Obviously, there is a must for further continued investment in research on the broader value of critical thinking. The application of computation thinking of the present study aims to strengthen the insufficient areas and avoid the controversial debate to the

nature of critical thinking in practice.

TVETs are one of the most complicated sub-sectors in education, and we now can even see the rise of the attention from tertiary institutes towards TVET as the massification of higher education has become a new trend all over the world. For [S.-Y. Lee \(2016\)](#), the further massification in higher education comes along with a lesser equalization. Nevertheless, we still can see that those tertiary institutes have redirected their focus onto the TVET domain when planning their development in the market. For long, the issue of the employability of graduates in the Technological Vocational Training and Education domain has long been viewed as the first priority in the eyes of the general public.

The present study applied a quantitative approach. The data was collected from a total of 180 students from the TVET domain and it is found that the respondents value the practices of critical thinking education in their academic journey more than employability. This is not to say that the notion of employability is no longer their visions and targets for post-secondary education but because they have a better understanding than ever that life-long education has already taken up the lead in the current practices in our society. Without a doubt, the need for an earlier preparation for a life-long competition in the new era of the knowledge-based-economy is essential for the new generation.

Demystifying entrepreneurship thinking in risk society

As mentioned we are now living in a risky society. An earlier preparation for the tertiary students to have a better understanding of the uncertainties in society is essential. With this background, a fundamental question arises then is about the possible way-out for the present generation to have an earlier preparation in the current knowledge-based economy. For decades, most of the governments in the world have repeatedly emphasized the promotion of critical thinking which, from their point of views, may be able to encourage the new generation to evaluate and consider their actions and reactions in a logical way. For [Schraagen and van de Ven \(2008\)](#), critical thinking is workable for the decision making process in crisis response. Needless to say, determining the levels of students in higher education is important in terms of establishing the methods of education that should be used. Such a practice is essential for the current rapidly changing socio-economic and political environment. Nevertheless, more and more people have started to rethink the role and function of critical thinking. As critical thinking has been viewed as a new platform to synthesizes critical thinking and integrate the complexity into practice ([Voskoglou & Buckley, 2012](#)). Thus, critical thinking has entrenched in educational policies of most countries as a way of reasoning to solve problems, make decisions and interact with our world ([Walden, Doyle, Garns, & Hart, 2013](#)).

For [Hu \(2011\)](#), the application of critical thinking is speculative but still can be accommodated with different thinking modes as it is a hybrid thinking ability, in which people can gain through a variety of means. Having said all these, the notion of problem solving has occupied an essential role in higher education. The crux of the current situation is that while the notion of critical thinking has been getting much more controversial, to identify another possible way for the students in leading with the betterment of problem solving skills has become an essential task for today. Some political parties are the major supporters for such a perspective. They do believe that a significant amount of latest social movements, such as the Sun Flower Movement in Taiwan and the Umbrella Movement in Hong Kong can be regarded as the consequential actions of critical thinking. To a certain extent, it leads to the rise of the voice regarding the removal of General Education modules in Hong Kong as they consider that more practices in General Education will embrace a painful consequence over a critical character among the youth. This is why the researcher would like to find a way-out for such a dilemma. This is not to say that the research considers that general education is really or not really a specific domain to embrace an overly critical character among the youth. Instead, it is not necessary to separate thinking methods into different ways. On one hand, critical thinking is a learned skill that requires guidance and practice for problem-solving ([Boonphadung, 2017](#); [Snyder & Snyder, 2008](#)). On the other hand, we can see the rise of the supporters of the value the functions of abstraction and analysis in problem-solving by critical thinking. We really cannot underestimate the functions of critical thinking, but we also have to be prepared for over watching on it.

A fundamental question arises then is about the way-out for the present generation to have an earlier preparation in the current knowledge-based-economy. A possible way-out can refer to a well-planned design in thinking process, so that the students can exclude the sensitive or political elements from their learning processes (Manabete & Umar, 2018). Liu et al. (2011) view critical thinking as an effective way to transform anxious learning experiences into flow experiences. For Wing (2006), critical thinking can be regarded as a core skill for everyone, not only limited for the computer scientists. Tezduyar (2001) gives a very positive comment onto the practice of critical thinking as he thinks it works for extending specific solution techniques to multi-scale platforms. Obviously, there is a must for further continued investment in research on the broader value of critical thinking. Thus, the present study would like to explore the application and function of critical thinking in the daily practice in our post-secondary programme with a particular attention onto the field of TVET.

RESEARCH METHODOLOGY

In order to ensure the research project can run smoothly and feasibly, the applicant has designed a research schedule for the present study. To identify suitable participants, this study adopted snowball sampling. The snowball sampling strategy is commonly used in qualitative research for identifying passive target groups (Browne, 2005). Samples of the present study were selected by the snowball sampling method which can facilitate the process of identifying and locating potential participants. Samples obtained through snowballing can be described as a series of referrals made within a circle of people who know each other (Biernacki & Waldorf, 1981). This sampling strategy is commonly used in qualitative research for identifying passive target groups (Green & Brown, 2005). A total of 180 students come from a Self-finance Institute in Hong Kong. All of the subjects are full-time degree students of the TVET undergraduate program at the same Institute. The researcher acted as a guest speaker to their enrolled course two times for the delivery of intensive training regarding the fundamental understanding of the notion of critical thinking. The Learning Outcomes of the course consist of the betterment of soft skills and the enhancement of entrepreneurial mindsets. Not every one of them has to become an entrepreneur but they have to make full use of their experiences from the case studies to start a business.

The initiative of the present study aims to have intensive supervision of their mindsets in what ways have been changed from the training of critical thinking. In the past, most of the course participants could not make a connection with the real situation. They could not link up with the wider contexts and mainly focused on the theoretical debate. As we are now living in a risky society. We often have to face different risk factors. In 2019, most people had no idea regarding the emergence of circuit breaker lockdown would become our daily practices all over the world. Today, in view of the COVID19 crisis, a number of airlines have to cut off their services. In October, Hong Kong has even started to promote Glycation. In short, the methodology of the present study is about an alterative learning experience for the students of an entrepreneurial course to apply new thinking skills in preparing their assignments. After the end of the course. The researcher generated the data by the assignments and made further analysis. Then, the researcher started to compare the performance of the course participants to evaluate the effectiveness of the promotion of critical thinking. On top of that, they distributed a questionnaire for the course participants which covered certain personal information and their narratives to their experience of the critical thinking journey of their enrolled entrepreneurial course.

A pilot study

The background of this study is a series of discussions in a core module of a four-year undergraduate program. This pilot study ran between February 2019 and November 2019 in a Self-finance Institute in Hong Kong. Right from the beginning, the instructor delivered an introductory session regarding the ideas of critical thinking, the application of it, and the function with the practice. All of the students involved are encouraged to find a way-out for their tasks at hand by using critical thinking. The module was of fourteen weeks. The students had to attend two lessons per week. The first lesson was a lecturing session and the second lesson was a tutorial session. A total of six classes were allocated to this pilot study. Three of the classes were from the profession of Journalism and Communication. Another three classes were from the profession of Civil Engineering. All of the students enrolled in vocational based degree programs. Contrary to most projects of TVET, the present study applies a Bottom-up instead of a top-down approach. All of the students involved were invited to engage with a proposal writing session which is an elective assessment item of their enrolled module.

The students had to act as a start-up company owner. They have to develop their entrepreneurial skills by answering the challenges of the selected real case studies. One of the major core assessment criteria is the notion of “Sustainability” which means that the students have to ensure that a provision of sustainable competence can be developed. All of the students were given a number of real case studies for them as reference. Such a practice could allow the students to have sufficient understanding regarding the latest socio-economic situation and political climate in what ways to influence the implementation of a business in the wider contexts. Then, they were encouraged to have a comparative study between the given cases and their proposal. Meanwhile, they were reminded that they may have to apply the Risk Society Theory as a foundation for the students to elaborate on their scheme. Right from the beginning, the notion of Risk Society Theory mainly referred to the natural risk which aims to make a theoretical understanding of the nature of control mechanisms in the current risky era (Beck, 1998). Nevertheless, living in an age of constructivism, the attempt to draw a line between and the current risky society seems to be unrealistic. This is because most of the current risky factors of our society are not really come from natural disasters but from the malfunction of our systems and practices. As Pepper, Webster, and Revill (2003) mentioned, society has become a laboratory where the risky factors are not only come from the outside but also the risky factors generated right inside a variety of institutions. The design of such a module task can allow flexibility in the curricula. The students do not have to stick with a specific topic or field as the foundation to elaborate their project but then have a chance to search for a suitable platform and make further comparison referring to the real situation. In fact, competence for the educator to hold a curriculum with sufficient flexibility will become a new demand of the current Education 4.0 era. All in all, training or promotion in specific thinking methods become an essential task for young people in the era.

Demographic information

This section discusses the demographic information of the participants. The study sought to assess the bottom-up perception from TVET students regarding the function of critical thinking and the enhancement towards problem-solving competence by the learned skills. A total of one hundred eighty students completed the questionnaires. The majority of the participants (92%) had not received any training of critical thinking before. Only fifteen subjects had received relevant training and all of them had received the relevant training in their high school or other platforms.

Table 1: Demographic information

Construct and Sub-construct	Frequency (f)	Percentage (%)
Hometown		
Mainland	50	28%
Non-local	42	24%
Local	88	49%
Sex		
Male	72	40%
Female	108	60%
Progress of the programme		
1 year	70	39%
2 years	70	39%
3 years or more	40	21%
Received relevant training before		
Yes	15	8%
No	165	92%
Number of tutorial attended		
Below 40%	33	18%
41-80%	111	62%
Over 81%	36	20%
Evaluation for the promotion of computational thinking		
1-2	33	18%
3-4	38	21%
5-6	29	16%
7-8	29	16%
9-10	46	26%
No answer	5	3%

RESULTS

The evaluation results related to the pilot study are shown in Table 1. As the majority of the participants have attended the lessons over 41%, the researcher considers the result of the pilot study reliable. Nearly half of the participants showed a positive response to the function of critical thinking. According to the preliminary results of the focus group, around two-thirds value the application of critical thinking as they are concerned that such a direction may improve their understanding of technological enhancement. One of the respondents pinpointed that such a practice makes him have a full picture of the current development and the reasons behind that. Another respondent added that the practice of critical thinking can be regarded as an intensive thinking process an engineer ought to be as their teachers often urged them to focus on specific techniques that are most commonly used. Nevertheless, about one-third of the participants do not think the application of critical thinking is workable for them to enhance their performance and understanding in their profession. Further analysis and specific study regarding those people is necessary with the purpose to figure out the limitations and concerned areas for the future if there is really a need to make the promotion of critical thinking become a common practice in higher education.

DISCUSSION

The results suggested that after the promotion of critical thinking, the students involved feel greater confidence in their professions. According to the preliminary findings from focus groups, however, some students do not feel confident in the discussed topics. What the reasons are to make some students feel confident about the same topic and other students feel helpless should be examined in further in-depth analysis. One of the possible reasons may be to the background of the participants. As we all know, the teaching and learning experience among the students in Civil Engineering domain is often fixed with a

clear boundary. However, open-ended assessments and tasks are commonly arranged for students from the profession of Journalism and Communication. Whether this is the crux of the differences of the evaluation towards the promotion of computational thinking should be covered in the later projects.

The enhancement of computational thinking works for TVET as the massification of higher education in Hong Kong and even the other regions have been redirected to the focus onto the Applied Degree programs. The issue of the employability of graduates in the TVET domain has long been viewed as the first priority in the eyes of the general public. Under the present uncertainties of the socio-economic and political climate, employability becomes an essence of the core element of consideration among the general public. This is the background of the rise of the important role of TVET in the era. In fact, it is important to ensure that young people around the world continue to have sufficient opportunities to access quality education, especially TVET. It should be noted that even the majority of the participants agree with the effectiveness of critical thinking can enrich their capabilities of the preparation of their assignments, but still, there are some participants which about one-third of the participants do not think the application of computational thinking is workable for them to enhance their performance and understanding in their profession. Contrary to the past few decades, we are now living in a rapidly changing environment. Think about the options of different jobs in the market. We could not find most of the jobs in the past.

Without a doubt, the direction of the current Higher Education 4.0 era needs to change. We may have to face a series of dramatic changes and the changes may even bring along up-side-down practices. We cannot just think about how to get the job done but have to think about how to finish our jobs by multiple aspects and or perspectives simultaneously. Today, we have to talk about soft skills and transferable skills.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

As mentioned earlier, there are several focal points to conduct this research. Nevertheless, no study is without limitations. This section would like to review the limitations of the present study and highlight future research directions. To begin with, the number of participants was too small to adequately address the real situation among the general public or to possibly generalize beyond the context of this study. With a larger sample, including a greater number of culturally different participants, the real differences would certainly have emerged. Then, an in-depth analysis of the pros and cons to the promotion of critical thinking would be identified and point to the direct about what insufficient areas are necessary to be enriched and why the drawbacks have to be adjusted.

CONCLUSION

The idea that the frontline workers in education already have skills in different thinking skills and negotiating, that they can pass on to students, is no doubt absolutely true in principle. Nevertheless, it is not clear that this happens widely in practice nor even that the desirability of such training is widely understood. The picture that has emerged regarding computational thinking across the TVET students does not show the emergence of critical thinking patterns of re-adjustment. For [T. Y. Lee et al. \(2012\)](#), this is because without sufficient opportunities for the learners to improve their computational thinking skills. No wonder, [T. Y. Lee, Mauriello, Ahn, and Bederson \(2014\)](#) considered that even the children as young as ten can be directly received the benefits from opportunities to engage in computational thinking. Such a direction is a very inspirational practice. Just as [Wing \(2006\)](#) mentioned that there is a need to make critical thinking becomes a fundamental skill and make further development in making it to be cultivated by everyone, not just computer scientists. In fact, a number of academic studies have confirmed that critical thinking skills can be enhanced while playing games ([Berland & Lee, 2011](#); [Holbert & Wilensky, 2011](#)).

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