I.D.E.A.S - A FUTURISTIC THINKING APPROACH TO DEVELOP ENTREPRENEURIAL COGNITION

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ABSTRACT

IDEAS represents an acronym depicting the Futuristic Thinking approach to develop entrepreneurial cognition resulting in improved new venture ideas. The use of this new approach will solicit a combination of multiple approaches to ensure quality business ideas. This paper is structured into five parts.

The first part introduces the study indicating the need to develop a new process. The second part presents a comparison of the existing processes highlighting their shortcomings. The third part focusses on the discussion of research design. The description of the new process and its advantages is presented in the fourth, and evidence from the student reflections is discussed in the fifth part. The paper concludes with future research directions which will assist in enriching the entrepreneurship and innovation education and training experience.

Keywords: Futuristic Thinking, Innovative Process, Entrepreneurial Cognition, Business Ideas, New Venture Idea, External Enabler, Opportunity Identification, Heuristic Thinking, Sequential Thinking, Counterfactual Thinking.

INTRODUCTION

In this paper, we introduce the IDEAS process of the Futuristic Thinking approach towards the development of entrepreneurial cognition with the objective of improving the quality of new venture ideas (NVIs). Futuristic Thinking consolidates previously employed cognitive processes and proposes a superior approach to the development of entrepreneurial cognition. The aim of this paper is to share the IDEAS process in the field of entrepreneurial innovation and to illustrate how the employment of this new process leads to the improved generation of NVIs. This process can be considered a compilation of multiple approaches/processes previously adopted by entrepreneurs, including alertness, creative thinking, pattern recognition, and critical thinking.

A review of each of these approaches suggests their incompleteness and inability to generate higher quality NVIs. Based on this review, this study answers the prime question: *"What cognitive process produces the entrepreneurial cognition that leads to the generation of high quality NVIs?"* The significance of such an approach and cognitive process is highlighted in the current research paradigm in which social, cultural, political and economic changes have brought innovation to the centerstage (Adams et al., 2016) and entrepreneurship (Vadastreanu et al., 2015). Enterprises do not innovate in isolation; as a result, global businesses are growing closer together with interdependence in terms of inventions, innovations, markets, production, and talent (Walshok, 2013). In such a context, a key to success for entrepreneurs is ascertaining how best to develop cognitive processes to achieve entrepreneurial cognition that ensures quality NVIs (Davidsson, 2015).

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This study investigates three guiding questions:

1. What cognitive processes are currently being used to develop entrepreneurial cognition, and what are their advantages and disadvantages?
2. Can a Futuristic Thinking approach be offered as a superior process for the development of entrepreneurial cognition that ensures higher quality NVIs and does this new process fill the gaps in the previous processes?
3. Do the data from participant reflections support this new process?

The first two guiding questions will be addressed in the next two sections through a review of literature on the existing processes. The third question will be answered when the trainee/student reflections are detailed in the findings section. The relevance of the new Futuristic Thinking process is presented towards the end of this study, which concludes with future research directions for entrepreneurs.

LITERATURE REVIEW

Entrepreneurial Cognition

Entrepreneurial cognition represents a set of assessments and process decisions that offer explanations for agent-centric entrepreneurial innovations (Garud et al., 2014; Kuratko et al., 2015). These assessments offer a theoretically rigorous and testable view to how entrepreneurs make decisions regarding opportunity evaluation, venture creation, and growth (Mitchell et al., 2002). The role of entrepreneurial cognition is of great significance considering the actor-dependent nature of the entrepreneurial process (Garud et al., 2014). Several processes make up entrepreneurial cognition including personal, sociological and environment variables (Liñán et al., 2011).

An Overview of the Existing Cognitive Processes

Previous studies suggest many cognitive processes that significantly predict the development of entrepreneurial cognition (Szpunar et al., 2014). Processes such as creativity (Baron, 2008), motivation (Kuratko et al., 2015), alertness (Gaglio & Katz, 2001; Kirzner, 1997), prospective thinking, counterfactual thinking (Frederiks et al., 2019), and perspective taking (Frederiks et al., 2019; McMullen, 2010) all affect entrepreneurial cognition. Ward (2004) suggests conceptual combinations, analogies, metaphoric interpretations, patterning based on old ideas, and problem formulation as important steps when it comes to the identification and evaluation of NVIs. Pittaway & Cope (2007) advocate the use of new venture creation because simulations offer a level of uncertainty, ambiguity and simulated context similar to the real business environment. New venture creation as a simulation exercise also encourages experiential learning and investment of the self (Cope, 2003) at an individual level, as well as co-participation at a group level (Taylor & Thorpe, 2004).

In addition, some studies point at design thinking as an effective process (Von Kortzfleisch et al., 2013). Glen et al. (2014) also advocate the use of design thinking. With the abundance of studies pointing out at these multiple approaches to the development of entrepreneurial cognition, a comparative analysis is helpful to point out at their commonalities and differences. Table 1 below compares these cognitive processes.

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Table 1
EXISTING COGNITIVE PROCESSES

Author	Identified New Venture Idea as a concept	Consists of external stimulation concept	Cognitive thinking mode	Futuristic Orientation
Bhave (1994)	None	Yes	*'Alertness'* through opportunity recognition concept	Not identified
Singh (2000)	Yes	Not identified	Not identified	Not identified
Shane (2003)	Yes (introduced as a concept called 'subjective conjecture')	Yes (Introduced as the concept called 'opportunity')	*'Alertness'* through opportunity recognition concept, 'Pattern Recognition' To combine both external and internal elements together	Not identified
Chandler, DeTienne, And Lyon (2003)	Applied interchangeably with the concept called 'opportunity'	Not identified	Comprised of 4 stages: (1) Proactive Search, (2) Problematic Search, (3) Fortuitous Discovery, and (4) Opportunity Creation	Not identified
Jones (1992, pp. 63-69),	Used only 'idea'	Not identified	Comprised of 3 stages: (1) Convergent Thinking, (2) Divergent Thinking and (3) Transformational Thinking	Not identified
Daviddson (2015)	Yes	External Enabler	(1) Alertness, (2) Recognition (3) Conception	Not identified
Futuristic Thinking (This study proposed)	Yes	Yes	Comprised of systematic approach with heuristic thinking in 5 stages: (1) Recognition (2) Sequential Thinking (3) Critical Thinking (4) Value Based Thinking (5) Conceptual Thinking	Identified

Shortcomings of the Existing Cognitive Processes

From the table above, various commonalities and shortcomings are noticeable. Among the issues associated, studies indicate that the traditional focus (Gibb, 2002), adopting the individual entrepreneur model (Laukkanen, 2000), the linearity of the process (Rasmussen & Sorheim, 2006; Sarasvathy, 2001), and the absence in the interaction of the processes (Szpunar et al., 2014) affect the development of entrepreneurial cognition. Other studies (Rideout & Gray, 2013; Wilson, 2008) also highlight the missing rigor and depth. A common issue among cognitive processes is the lack of a clear means of separating external stimuli (e.g., exogenous change and external enablers) from internal production (e.g., new venture idea, subjective conjecture). This shortcoming causes a lack of clarity in the concepts of opportunity (outside stimulus) and new venture idea (internal production) (Hansen et al., 2011). Unlike subsequent phases of the innovation process aimed at investment decisions, the phase of idea generation is relatively blurred, unpredictable and unstructured (McMullen, 2010). While previous studies suggest that entrepreneurship is a heuristic process (Baron, 2008; Harrison et al., 2015; Holcomb et al., 2009), a review of the relevant literature identified a number of studies which describe heuristics as a bias (Zhang & Cueto, 2015) but only limited explanation about the variety of

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cognitive processes applied in the generation of ideas. Based on this empirical evidence, it can be inferred that with the failure to incorporate the non-linearity of the nature of entrepreneurial demands, the current processes cannot predict the development of entrepreneurial cognition that leads to the generation of high quality NVIs. While different processes address one of the two shortcomings listed above, none of the cognitive processes address both of them. With this research context, the authors decided to compile the processes outlined above and propose a new approach called *'Futuristic Thinking'.*

RESEARCH DESIGN

This paper uses a descriptive research design supplemented with the evidence from the participants' reflections on the use of the new process. The descriptive approach assists in answering the first two research guiding questions pertaining to the exploration of the existing cognitive processes and to the development of a new approach. The evidence from the student reflections assists in augmenting the descriptive approach and answers the last research guiding question. The descriptive research is based on a summary from the literature review of the currently-used processes that apply the terms *'entrepreneurial innovation'*, *'entrepreneurial learning'*, *'entrepreneurial education'*, *'design thinking'*, *'idea generation'*, and *'entrepreneurial cognition'*. Studies using these terms were analyzed for conceptual definitions and frameworks that discuss the development of entrepreneurial cognition leading to new venture idea creation.

A comparison of these processes was made for the purpose of evaluation (as seen in Table 2). The comparison assisted in categorizing the advantages and disadvantages of each process. In addition, it helped segregate the positives of the new approach, Futuristic Thinking. In order to obtain the required evidence, three participant groups were chosen for the application of the Futuristic Thinking approach. The demographics of the three groups were as follows,

- Student group 1 consisted of 30 postgraduate students between 25 and 45 years of age with a work experience of between two and twenty-five years. They had no prior entrepreneurial experience.
- Trainee group 2 consisted of 25 entrepreneurs, each with between two and ten years of entrepreneurial experience and a history of establishing at least one firm. This group was employed at a Thailand government business incubator organization meet.
- Trainee group 3 consisted of 20 business executives (intrapreneurs) holding director roles in leading five-star hotels in Thailand and aged between 35 and 55 years old. They each had work experience of ten to thirty years but no entrepreneurial experience. This group was employed during a training session on the topic of *"intrapreneurship at the workplace".*

The participant groups were allowed to develop business ideas in a regulated training workshop environment within a stipulated time of three to four hours and were allowed to work in groups of three to five participants. The trainee/student reflections (as seen in Table 3 presented later in the paper) supplemented the descriptive analysis with evidence suggesting the usefulness of the proposed new approach.

FINDINGS

This section presents the details of the IDEAS process of the Futuristic Thinking approach. It can be seen as a heuristic thinking approach which has five process stages: realizing the need for change (Prospective Thinking or Alertness), understanding the sequence (Sequential Thinking), understanding what not to change (Critical Thinking), understanding what the change

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will look like (Counterfactual Thinking), and understanding what this change might entail (Perspective Taking). The five stages of the new process consolidate other processes and provide a guiding principle towards the development of entrepreneurial cognition.

This section has three sub-sections where the first sub-section presents the stages of the Futuristic Thinking approach. The second sub-section presents the process of applying these stages, and the third sub-section presents the advantages of the approach.

Sub-Section 1: The Stages of the Futuristic Thinking Approach

The Futuristic Thinking approach consolidates multiple individual processes and provides IDEAS process for the development of entrepreneurial cognition. Notably, each stage in this process requires different cognition. The concepts of these cognitive processes can be linked to previous studies on entrepreneurship and innovation. These stages of the Futuristic Thinking approach can be summed up in the acronym IDEAS, which stands for: (1) identifying current issues (Alertness), (2) drawing out a time-line (Sequential Thinking or Prospective Thinking), (3) examining values and external enablers (Value-Based Thinking, Opportunity Recognition or Critical Thinking), (4) anticipating stakeholders' actions (Counterfactual Thinking), and (5) sensing new possibilities (Conceptual Thinking or Pattern Recognition). The stages of the process are described in Table 2 below. The section after the table describes the application of the five stages.

Table 2
STAGES OF THE FUTURISTIC THINKING PROCESS

Stages	Applied Cognitive Thinking Method	Explanation
I-Stage: Identifying current issues	Change Detection Alertness Opportunity Recognition	Individuals detect disequilibrium (Aka, issues, problems) in the economic situation from changes or the external environment (e.g., political changes or technological changes)
D-Stage: Drawing out a timeline	Sequential Thinking Secondary Data Applied Prior Knowledge Applied	Individuals apply previous knowledge and data to see the history of the change and issues.
E-Stage: Examining values and external enablers	Value-based Thinking Critical Thinking	Despite there being a change, individuals need to look for the principle values which will not change
A-Stage: Anticipating stakeholders' actions	Propensity Thinking Change Detection	Visualizing the stakeholders who face the difficulties. Visualizing the stakeholders who will benefit from the situation and those who will not. Focusing on the people who face the problems.
S-Stage: Sensing possibilities	Pattern Recognition Conceptual Combination Counterfactual Thinking	Building on the value principles which will not change, learning how to combine the negative stakeholders with unchanged value principles to create new venture ideas.

Source: Own experience

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Sub-Section 2: Application of Futuristic Thinking Approach for NVI Generation

This sub-section describes the application of the IDEAS process of the Futuristic Thinking approach. As suggested before, Futuristic Thinking offers a heuristic approach consisting of five stages that involve multi-faceted entrepreneurial cognitions. Each stage contains an individual sub-method that provides the input for the next stage in a sequential order. The application of the Futuristic Thinking approach was undertaken during training workshops. The entire training workshop (from introductions to the completion of the fifth stage) took approximately three hours. A detailed explanation of all stages is described here.

- Stage 1: I-Stage: Identifying Issues: At the beginning of this stage, the facilitator introduced the workshop and asked the participants to brainstorm ideas on current issues while giving them the stimulus to think about any current disequilibrium in the market. The stimulus was given in the form of questions such as, *"Are there any products/services whose actual worth you feel is extremely low compared to their price?"; "Is there anything in daily life that you feel is losing its functional value?" or "What is an example of recent situational change that affected your life or the people around you?"* Participants were given about three minutes to contemplate the questions and note down identified issues on paper individually. At the end of this activity, the facilitator asked each group to select only one *"issue"* per group that they wanted to work on for the rest of the workshop. There were no specific criteria for the selection of issues per group except for team agreement. In total, this first stage (the I-Stage) took about 30 minutes. The outcome of this stage for each group was an issue which indicated the probability of an opportunity.

- Stage 2: D-Stage: Drawing out a Timeline–For this stage, the facilitator asked the groups to apply visual thinking to elaborate the idea in a sequential timeline. In practice, the participants were asked to draw a map on a writable space, such as a whiteboard or a canvas. The participants brainstormed and articulated the situation through visual presentations. To help the participant groups draw their timelines, the facilitator provided stimuli in the form of guiding questions, such as, *"What causes the issue?"* Each group constructed the timeline of their issues to explain the major situational changes around the idea. In general, the timelines were formulated to cover the past two to three decades. As a result, the D-Stage took about 30 minutes to complete. The outcome of this stage was a timeline which illustrated the context of how the opportunity came into existence. A well-developed timeline helped the participants to foresee the connections between various phenomena which then aided the next stage.

- Stage 3: E-Examining Value Principles: At this stage, the facilitator pointed out the significance of the varied perspectives of changes in the future. The facilitator referred to Jeff Bezos's principle of innovation based on what's not going to change in the next 10 years (Kirby & Stewart, 2007). The participant groups were advised to follow the elements of values from the value pyramid (Almquist et al., 2016) to identify the value principles for what will not change in future. This was done in two stages where, first, the participant groups were asked to identify the key value principles from the past. Next, they were asked to identify the current value principles. At the end, they were asked to identify the value principles which have remained unchanged through time. To wrap up this stage, the instructor asked the participants to review the sequential timeline developed in the previous stage. The outcome of this stage was the identification of unchanged value principles. In total, this stage took around 20 minutes to complete.

- Stage 4: A-Anticipating Stakeholders Actions: This stage was comprised of 3 steps. First, based on the output from the previous stage, the instructor asked all teams to identify all related key stakeholders from the business opportunity statement created in the first stage. Second, the instructor asked the participants to determine the external enablers that currently affect the issue. Here, the facilitator stimulated the session by including a discussion on PESTEL to help identify the external enablers. The participants were given about three minutes to identify the specific components of the PESTEL analysis which might significantly affect the opportunity under consideration. Third and last, the participants were asked to construct potential scenarios of relationships between the opportunity statement, the external enablers, and the stakeholders. This led to the outcome of this stage, which was the categorization of stakeholders into two groups: those who will benefit from the change and those who will be disadvantaged by the change. Overall, this session took approximately 30 minutes.

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- Stage 5: S-Sensing Possibilities: Based on the categories generated in the previous stage, the participants were asked to construct a matrix on the chart or whiteboard. The matrix consisted of three columns (as depicted in Figure 1). The purpose of the matrix was to collect a visible representation of the input from stages 3 and 4 in a more systematic approach. This was then used again in the idea generation stage.

The participants were asked to put their thoughts into the matrix. In the first column, they needed to input the key unchanged value principles which they thought would change within the next 10 years. Second, they were asked to write down the anticipated benefits or disadvantages to the key stakeholders. At the end of these statements, they were asked to add a sign (-, +) as an indicator. Examples of statements produced in this stage were, *"University lecturers might lose their teaching jobs because of Artificial Intelligence within 5 years (-)"; "Elderly people will face a difficult time finding caretakers in the next 10 years because of the low birth-rate (-)"; "Elderly people will need to work longer because of the longer lives they are living (-)"*; and *"Students can access all of the content in the world for free because of the open sharing economy (+)".* Based on the matrix, the participants were asked to focus on the stakeholders who were disadvantaged because of the change because this group was the one which needed solutions.

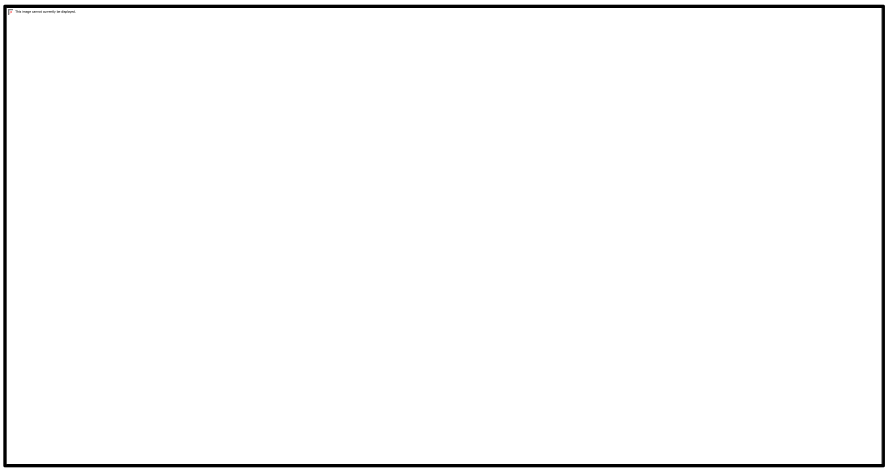

FIGURE 1
SENSING POSSIBILITIES IN FUTURISTIC THINKING APPROACH

Then the facilitator helped each group to form possibility statements. Examples of questions used to guide the creation of possibility statements produced were, *"What products/services in the future will deliver the same principle value to the university lecturers who might lose their teaching jobs because of Artificial Intelligence within 5 years?"; "What products/services in the future will deliver the principle value to elderly people who will face a difficult time finding caretakers in the next 10 years because of the low birth-rate?"*; and *"How can the innovative principle values be delivered to elderly people who will need to work longer because of the longer lives they have?"* The participants were asked to generate new venture ideas based on these possibility statements. They were given about ten minutes for each statement. In total, the idea generation stage took about 30 minutes. After that, the participants were also given another 30 minutes to draw/illustrate their selected ideas in the given idea sheets. Overall, the five stages of the approach took 180 minutes. Table 3 depicts the time used to complete each stage. Figure 2 depicts the new process in the form of the acronym IDEAS.

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Table 3
SUMMARY OF TIME USED TO COMPLETE EACH STAGE (IN MINUTES)

I–Stage	D-Stage	A–Stage	E-Stage	S-Stage	Total
30	30	30	30	60	180

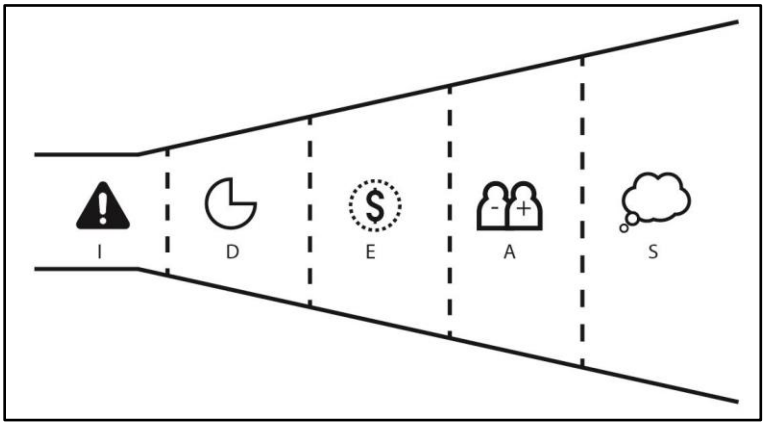

FIGURE 2
IDEAS STAGES OF FUTURISTIC THINKING FOR NVI GENERATION

Sub-Section 3: Advantages of the New Process

Based on the review of the currently employed cognitive processes for the development of entrepreneurial cognition, IDEAS as a futuristic thinking process offers the following advantages:

1. **Systemic View:** Studies, such as those carried out by Szpunar et al., (2014) and George, et al. (2016), have indicated how the existing cognitive processes offer blurred explanations for how NVIs are derived. Appearing to be disjointed and fragmented, these cognitive processes do not interact with one another. It is notable that innovations are supported by complementary competencies and resources (Walshok, 2013) and entrepreneurship ecosystems consist of social, cultural, political and economic feedback mechanisms (Auerswald & Dani, 2017). The Futuristic Thinking process provides a systemic approach to developing entrepreneurial cognition by increasing the frequency and intensity of the interactions among these contributing innovation mechanisms. This new process offers the analysis of multiple mechanisms that helps increasing the interactions between the required competencies and resources.

2. **Heuristic Nature:** Entrepreneurship is more about seeing the whole forest instead of just looking at one tree. Entrepreneurs rely on heuristics or rules of thumb, and are comparatively more positively biased towards equivocal situations (Shepherd et al., 2015). Futuristic Thinking offers a comprehensive thinking toolset which will help entrepreneurs make holistic decisions.

3. **Future Oriented:** NVIs are imagined future ventures (Davidsson, 2015) and are very abstract in nature. Previous cognitive frameworks (discovery view, creation view) have not offered effective ways to envision the future by using information from the past to detect or create an idea. These existing frameworks offer a retrospective view and limited empirical support (Davidsson, 2015; Frederiks et al., 2018). However, this new process of Futuristic Thinking offers a prospective view that uses information from the past to predict a more rational future. This supports the *"imagined future ventures"* (p. 684) concept from Davidsson (2015).

4. **Inclusion of Design Thinking:** Glen et al. (2014) indicated how design thinking does provide a reasoned opposition to a traditional plan and pitch approach, although it is lacking in terms of providing methodical guidance to aspiring entrepreneurs on how to develop NVIs. The Futuristic Thinking approach fills this gap

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by proving step-by-step guidance on developing entrepreneurial cognition for the generation of high quality NVIs. Design thinking does not involve the opportunity concept of alertness. It does not start with alertness to the change (exogenous shock). In addition, design thinking lacks what can be called a pedagogically transferable concept, making it easier to implement than to teach (Clark & Smith, 2008).

5. **Sense of Value:** Lastly, The existing cognitive processes do not incorporate the value aspect (Hitt et al., 2011) leading to the loss of competitive advantage. Futuristic Thinking offers a reference point for this focus change.

DISCUSSION

Student Reflections as Findings

After the workshops, the respondents (trainees and students) were given time for reflection, during which they were requested to fill out reflective essays about the use of IDEAS pedagogy. Table 4 presents some of the student reflections.

Table 4
STUDENT REFLECTIONS ON THE APPLICATION OF THE FUTURISTIC THINKING PROCESS

Summary of reflections	Student responses
Systematic approach	*"I have learnt to apply different thinking methods at the different stages, systematically."* *"I have practiced a very nice procedure which helps me to generate great ideas."*
Heuristic thinking approach	*"I have used a variety of thinking styles to come up with such great business ideas."* *"I applied timeline thinking (Sequential thinking) to help me understand the root cause of the issue more deeply. I applied critical thinking to find the unchangeable values. Then I came up with the ideas later."*
Helps in new venture idea generation	*"I think I am able to create much better breakthrough ideas."* *"Compared to normal creative thinking, this gives me a much more established procedure for coming up with more valid ideas."*
Resonate with both concept of external stimulus and internal interpretation	*"This class gave me the ability to look around at all the situational changes around me. It taught me that every change in our lives can eventually turn into a great business opportunity."*
Contain the futuristic orientation	*"I never thought about predicting the future from the values that will not change before. This is such a nice aspect and great approach."* *"I think the approach helps me to be able to anticipate the right future, which gives me much more confidence that the created idea will meet the window of opportunity in the future, rather than generating ideas which will soon be obsolete."*

Overall, the participants' reflections support and validate the approach as superior to previous methods. The reflective essays revealed that the IDEAS process offered a novel and effective approach to the generation of entrepreneurial cognition. The new approach helped students to create more innovative business ideas in a systematic method. Figure 3 depicts the application of this process in the classroom.

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Theoretical and Managerial Implications

With the recent focus on cognitive biases and heuristics (Liñán et al., 2011a), the focus on the development of entrepreneurial cognition becomes all the more important. Research supports the view that entrepreneurship plays a significant role in the overall development of society, and that entrepreneurs are the central cognitive component in the path to establishing an entrepreneurial venture (Liñán et al., 2011). With the development of the concepts related to social learning theory (Bandura, 1977, 1982), the research and practice fields have stressed how behavior is a consequence of person-situation interaction, and that the entrepreneurial cognitions help the entrepreneurs make evaluations about the opportunity, the New Venture Ideas, and the resources needed for the growth and establishment (Mitchell et al., 2002; Siu & Lo, 2013). Among the individual level variables affecting the development of entrepreneurial cognitions, the entrepreneurship education is very important. Therefore, the current study proposes the use of IDEAS as a futuristic thinking method to enhance the development of quality business ideas through improved entrepreneurial cognition.

The study contributes to both the research and practice fields. The theoretical contribution of this study is the introduction of the new cognitive process of IDEAS which can be seen as an amalgamation of several previous used approaches oriented towards cognition based entrepreneurship instruction (Zampetakis et al., 2011). Entrepreneurship education will be benefitted with the use of this new method. The current study also provided relevant empirical evidence by using the method in classroom teaching during the training session as pointed out before. Figure 3 shows the application of the IDEAS in class.

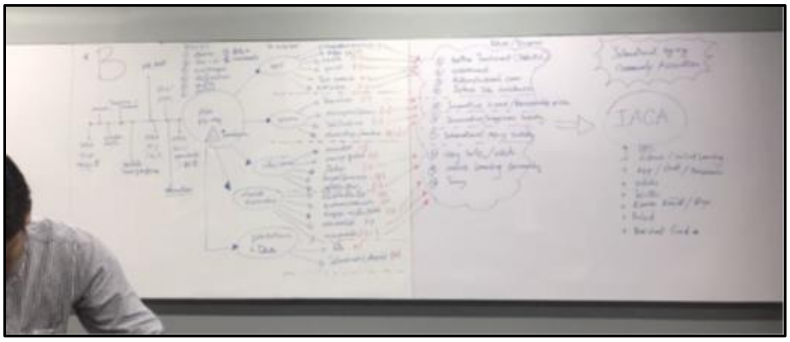

FIGURE 3
APPLICATION OF FUTURISTIC THINKING APPROACH IN CLASSROOM

The study also makes a significant managerial contribution by paving the way to the development of entrepreneurship among novice and serial entrepreneurs. For novice entrepreneurs, the approach developed in this study will help them to be more effective in developing entrepreneurial schema Busenitz & Lau (1996) thereby in generating high quality new venture ideas which are more rigorously-developed compared to non-method guided generation. This is evident in the number of advantages that this newly developed IDEAS method offers over the previously used cognitive processes. Moreover, both novice and serial entrepreneurs can use this approach to seek more opportunities to generate new venture ideas for expanding their businesses and sustaining the growth of their company.

CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

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Work productivity can be improved with the use of cognitive teaching methods which enhance the resilience in the times of failure (Drnovšek et al., 2010), and train the future entrepreneurs towards the development of self-confidence and motivation in addition to the required analytical skills. This study contributes to the existing literature by proposing a comparative analysis of the existing cognitive approaches, by designing a new cognitive approach, by indicating the advantages of the new approach, and by providing support for this new approach through student reflections.

In the future research projects, the IDEAS framework can be used to better understand the evolution of cognition towards quality idea generation. Future research in this field can explore the role of culture on the development of entrepreneurial cognition to counter the static nature of the entrepreneurship research as pointed by Bird (1988), Busenitz & Lau (1996), and Liñán & Chen (2009).

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