

THE FOUR ACES: THE ENTREPRENEURIAL MINDSET AS AN EDUCATIONAL TOOL

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ABSTRACT

This research paper attempts to address the question of how the entrepreneurial mindset can be taught. This question requires two parts to answer it; firstly, a definition of the entrepreneurial mindset, and, secondly, the methods by which the entrepreneurial mindset can be taught.

The Four Aces Framework includes the Ace of Hearts 0-passion and purpose, the Ace of Diamonds-clarity and aspiration, the Ace of Spades-action and resources, and the Ace of Clubs-opportunity and focus. Using this framework, the elements of the entrepreneurial mindset definition can be implicitly taught to grow the individual potential of potential entrepreneurs.

The entrepreneurial mindset can support the educational and entrepreneurial outcomes for learners with immediate effect. Evidence shows that entrepreneurial mindset education could have highly significant and positive impacts on developing individual entrepreneurial potential and entrepreneurship activities.

Keywords: Entrepreneurial Mindset, Entrepreneurial Mindset Education, Teaching Entrepreneurial Mindset, Four Aces Framework.

INTRODUCTION

Scholars have identified the importance the Entrepreneurial Mindset (EMS) can play in the achievement of entrepreneurial ventures. Scholars argue further that the EMS can be developed and advanced through education. This paper provides a method of teaching the EMS to school-aged learners to embed the concepts of the EMS as early as possible. It is anticipated that EMS education will positively impact learner outcomes in various areas, including career success. As Rodriguez & Lieber (2020) note, “*the positive relationship between gains in entrepreneurial mindset and perceptions of future career success, which contributes to the increasing emphasis placed on education to foster relevant learning and skills that help youth succeed in today’s changing workplace*”.

This article further emphasizes the importance of teaching EMS concepts to children when they are as young as possible to support in developing attitudes of perseverance, resilience and motivation. Clarke & Holt (2017) evidence those children’s personalities are malleable enough to teach entrepreneurial qualities, and support the concept of teaching and learning through the use of images and creative reflections. Mauer et al. (2017) go further and emphasize the importance in entrepreneurship education for children for the building of self-efficacy and growing the motivation and passion of pursuing entrepreneurial activities. Motivation, passion and resilience are critical factors in the entrepreneurial mindset and can be adapted for working with young children to build these foundations of mindset early on, whereby fostering curiosity, overcoming failure and being resilient can support the entrepreneurial outcomes of these children into adulthood (Zupan et al., 2018; Žur, 2015; Mukhambetova et al., 2019; Mukhtar et al., 2021).

Defining the Entrepreneurial Mindset

The definition of entrepreneurial mindset in this paper has been determined using a critical review of over 25 scholarly articles, and focuses on cognitive tendencies, intention, commitment, resilience and capability. Evidence suggests that entrepreneurial traits and behaviors have a correlated effect to successful entrepreneurial outcomes as well as to feelings of wellbeing and happiness (Dweck, 2006; Duckworth, 2017; Gibb, 2002; Kourilsky, 1995; Kuratko, 2005; Fayolle, 2003). Hattenberg et al. (2021) go further to state that instead of “*focusing on aspects, traits, or capabilities, EMS [entrepreneurial mindset] helps in understanding why anyone would engage in entrepreneurial initiatives, because the focus is on an individual’s ability and willingness, rather than the salience of entrepreneurs*”. This adjustment of focus on entrepreneurial traits or capabilities to an individual’s ability and willingness to engage in entrepreneurial initiatives highlights the potential that all individuals have to develop and harness their EMS potential to achieve an outcome or aspiration.

While the EMS can be grown and developed (Shepherd et al., 2010; Haynie et al., 2010), it also can be present and manifest behaviorally without having been explicitly taught or identified in some people who possess those entrepreneurial cognitive tendencies and personality traits. Pidduck (2021) highlights that this “*explains why some people behave more entrepreneurially than others and why they respond to certain opportunities but not others*”. Hattenberg et al. (2021) reinforce further that personal drive is another critical factor to the development of the EMS as “*not only an individual having a positive feeling toward something, but also an individual’s ability and willingness to engage in entrepreneurial behavior*”, highlighting that passion with ability and willingness can support more positive entrepreneurial outcomes.

While a number of critical reviews have been undertaken in this research, Ireland et al. (2003) EMS definition resonated most with this article’s intention and is therefore the preferred definition in this instance: entrepreneurial mindset is “*the ability to rapidly sense, act, and mobilize, even under highly uncertain conditions*”. This definition includes the cognitive traits, personality capabilities-particularly focused on resilience, perceptiveness, and solutions-focused attitudes-and the wherewithal to take required adaptive action. Shepherd et al. (2010) define the EMS as “*the ability and willingness of individuals to rapidly sense, act, and mobilize in response to a judgmental decision under uncertainty about a possible opportunity for gain*”. Both definitions refer to cognitive traits and personality capabilities, but the latter also references the possibility of risking opportunity gain, thereby emphasizing that efforts are not necessarily for gain but could lead to other possible advantages.

Regardless, for the purposes of this research and for the identification of a teaching method for school learners in the area of entrepreneurial mindset, this article maintains (Ireland et al., 2003) definition.

Using this definition of entrepreneurial mindset, a framework for the implementation of the entrepreneurial mindset has been developed to support entrepreneurship activities and education. This article considers the impacts of implementing EMS programs at secondary school level, and the importance of this concept in entrepreneurship education. Developing strong EMS techniques can equip young people with the skills to overcome adversity, build resilience, grow opportunities, and be action focused and to identify a personal passion.

The Four Aces Framework has been designed to strengthen the implementation of the EMS program alongside Growth Mindset concept: That intelligence is changeable and that “*failure can be a painful experience. But it doesn’t define you. It’s a problem to be faced, dealt with, learned from*” (Dweck, 2012). Using aspects of Dweck’s Growth Mindset concept (2017)

will assist in building learner resilience, perseverance understanding, and developing the entrepreneurial mindset, all of which are fundamental to entrepreneurship success.

Entrepreneurship education has been taught in secondary schools in the form of enterprise or business classes in New Zealand since the 1980s (Oldham, 2018) with programs that ranged from “*technical training in preparation for entrepreneurship through to programs for broad, transferable skills described as enterprising*”. At the inception of the program design across New Zealand, the focus was “*to identify business needs and to market these needs as the public good and subsequently just common sense*” (Oldham, 2018). Specifically, learners were required to “*develop their own ‘countries’ replete with social and economic systems*” to better support enterprising cultures in the schools adopting the programs (Oldham, 2018). Formal entrepreneurship-focused qualifications currently do not exist in the New Zealand schooling system, despite there being university degrees in entrepreneurship and entrepreneurship centers at various universities in the country.

Entrepreneurship is deemed to be a significant contributor to job creation, economic development and innovation (Täks et al., 2014; Thurik, 1996; Carree et al., 2002; Bodde, 2004, Bjørnskov & Foss, 2016). Teaching entrepreneurship is an important component to economic potential (Gorman et al., 1997) and is a highly regarded field that is given significant attention in the current entrepreneurship movement across the globe (Sá & Kretz, 2015). The earlier entrepreneurship education is taught, the more reinforced the learning will be. As Paço & Palinhas (2011) evidenced: “*It is assumed that children who take part in entrepreneurship educational programs will be more alert to the entrepreneurial culture, will have a higher level of personal development, will participate more actively in society and will reveal a greater sense of commitment and social responsibility*”. In New Zealand, entrepreneurship education is often taught in isolated programs at senior secondary school level, but there needs to be more done to develop qualifications throughout secondary school that transition into university-level qualifications, and foundationalized in the educating of young children in the primary years of education.

Gibb (2002) defines the entrepreneurial mindset in relation to attitudes toward new experiences, changing situations, and environments and flexibility in thinking and ideas, but not all entrepreneurs aspire to entrepreneurial ventures. Rather than entrepreneurs always seeking opportunities for independent value-generation, sometimes the entrepreneurial outcomes of individuals are a “*response to external conditions and serendipity that opportunities have been pursued, rather than by an active search*” (Galloway & Kelly, 2009; Gapp & Fisher, 2007). Regardless of the entrepreneurial intention, the key influencing factors of entrepreneurial success include coping with uncertainty, problem-solving, decision-making, flexibility, opportunity recognition, innovation, networking and a willingness to learn from both positive and negative experiences (van der Kuip & Verheul, 2004). Furthermore, the impacts of entrepreneurship skill development through education can support the entrepreneurship outputs (Kuratko, 2005; Neck & Greene, 2011).

In contrast, low entrepreneurship potential was found to be due to an absence of role models, lack of experience in business start-up processes, and little or no desire for autonomy or ambition to start a firm (Neck & Greene, 2011; Diegoli & Gutierrez, 2018; Diener & Biswas-Diener, 2011).

Teaching Entrepreneurial Traits and Entrepreneurial Behaviors

In the context of learning, Dewey (1934) argues that through the activation of emotional engagement through creating personal investment into learning, learners develop an emotional commitment that supports meaningful and relevant achievement. Henry et al. (2005) raise the issue of teaching entrepreneurship education programs and whether entrepreneurship can be taught, and Brush et al. (2015); Camelo-Ordaz et al. (2012); Campos et al. (2017) ask, “*How does one teach entrepreneurship?*”. There is strong evidence that entrepreneurship can be taught, but having an awareness of entrepreneurship activities and attitudes can further support the successful engagement of entrepreneurial education. As outlined by Ellborg (2018): “*The aim is to make visible conscious and unconscious attitudes toward entrepreneurship, partly to make the students aware of their and others’ understanding of a social phenomenon, partly to better adapt entrepreneurship education to their prerequisites*”.

Entrepreneurial education focuses on the development of skills, behaviors and traits that will contribute to the entrepreneurial outcomes of learners (Garavan & Barra, 1994). It is important to define these concepts in order to differentiate between them and to identify the areas that these concepts could be developed in the context of mindset. For the purpose of clarification, entrepreneurial qualities, traits and personalities are defined as individual personal characteristics, and entrepreneurial behaviors and capabilities are defined as learned practice.

According to Kuratko (2005) & Winkel (2013), entrepreneurial skills can be learned and taught. Lee et al. (2018) state that: “*Education embracing entrepreneurship-focused topics has been theorized as a determinant of valuable behaviors, skills, and mindsets among students*”. Entrepreneurial behaviors and entrepreneurship capabilities have a clear overlap, according to Lackey (2014); Lee et al. (2018), who define entrepreneurship capabilities as the “*set of behavioral tendencies that leverage an individual to develop and cultivate the ability to achieve success in entrepreneurship*”. While Amit et al. (1993) argue that entrepreneurial traits are difficult to observe, Robbins (1997) states that traits can be identified as perseverance, creativity, initiative, propensity to take risks, self-confidence and internal locus of control. Personality is not only hereditary but also influenced by the environment (Robbins, 1997), with culture, family, friends, social groups, attitudes and values recognized as influential factors for the development of an entrepreneurial personality. Chell et al. (1991) refer to three critical personality focus points in relation to entrepreneurial personality, “*the need for achievement, internal locus of control and propensity to take risks*”. These three entrepreneurial personality traits reflect elements of motivation, resilience, experience and planning.

While there is clear value in the development of entrepreneurial outcomes through the development of traits, personalities and qualities, there are equally strong arguments for the development of behavior. Gartner (1990) argues against personality traits as influential to entrepreneurial outcomes and states that the focus instead should be on entrepreneurial behavior, whereas Littunen (2000); De Vries (1977); Luca (2017); Mäkimurto-Koivumaa (2016) recognize the complimentary elements of both entrepreneurial behavior and entrepreneurial personality traits in attaining positive entrepreneurial outcomes.

METHODOLOGY

The methodology used in this paper is a critical review (Hyett et al., 2014) and an analysis of literature (Wildling et al., 2012) relevant to the entrepreneurial mindset, entrepreneurship, entrepreneurial traits and behavior, and entrepreneurship educational practice. The analysis identifies key areas for entrepreneurship education growth and relates these findings

to the spiral of capability, acknowledging that there are many overlaps and connects between these areas of entrepreneurship education.

With a focus on deliberate practice and repetition, four influential learning approaches have been identified as fundamental to the teaching of the entrepreneurial mindset. Using teaching implementation approach, the four approaches are to, firstly, believe we can grow, learn and improve; secondly, a desire and purpose to improve; thirdly, to understand how we can improve with deliberate practice; and finally, to ensure a low-stake situation with consequences that won't be catastrophic or overly significant. Creating a desire and purpose to improve requires the extraction of passion and interest in the learner. Connecting interest to entrepreneurship activities creates an authenticity to the subject matter, the activity and the aspirational vision of the learner. To understand the benefit of deliberate practice requires repetitive action to truly see those benefits. Provision to allow the building of this activity is critical in the learning program. A Low-stake situation helps build confidence in the learner to participate wholeheartedly in the activity, and reinforces the action of deliberate practice to the learner by participating authentically and feeling safe to do so.

A review of existing critical analyzes defining the entrepreneurial mindset has been incorporated into this research. Table 1, Naumann's (2017) "*Definitions of Entrepreneurial Mindset (EMS) in the Literature*" is a list of entrepreneurial mindset definitions of 9 scholarly articles, and Table 2 is an analysis of Hattenberg et al. (2021) 19 scholarly articles with critical reviews of further definitions of the entrepreneurial mindset. Table 3, "*Entrepreneurial Mindset Definition Ace Value*", contains a critical review of 10 scholarly articles selected by the researcher that also define the entrepreneurial mindset and include a correlated grade to this article's teaching method. The grading in Table 4 measures the level of focus there is from each scholarly article to the concepts held within the Four Aces Framework discussed further in this article. Overall, these three tables contribute to two research components: a guide to the confirmed definition of the entrepreneurial mindset for the purposes of this paper, and a correlation of the various definitions in relation to the teaching method outlined in the following sections.

Author	Definition
McGrath & MacMillan (2000)	"Ability to sense, act, and mobilize under uncertain conditions".
Ireland, Hitt, & Sirmon (2001)	"Way of thinking about business that focuses on and captures benefits of uncertainty" "Growth-oriented perspective through which individuals promote flexibility, creativity, continuous innovation, and renewal."
Haynie & Shepherd (2007)	"Ability to adapt thinking process to a changing context and task demands."
Dhliwayo & Van Vuuren (2007)	"Way of thinking and acting about business."
Shepherd et al. (2010)	"Ability and willingness of individuals to rapidly sense, act, and mobilize in response to a judgmental decision under uncertainty about a possible opportunity for gain."
Baron (2014)	"Think, reason, make decisions, plan and set goals"

	<i>in relatively unique way.”</i>
Davis et al. (2016); Culkin & Mallick (2011)	<i>“Constellation of motives, skills, and thought processes that distinguish entrepreneurs from non-entrepreneurs.”</i>
McMullen & Kier (2016)	<i>“Ability to identify and exploit opportunities without regard to the re- sources currently under their control”, only working when entrepreneurs experience promotion focus.</i>
Note: Reprinted from: Naumann (2017).	

Number	Author	Cognitive	Skills	Affective
1.	Shepherd et al. (2010)	<ul style="list-style-type: none"> • Beliefs • Knowledge* 	<ul style="list-style-type: none"> • Ability to sense 	<ul style="list-style-type: none"> • Attitudes on risk • Affective state* • Emotions*
2.	Robinson et al. (2016)	<ul style="list-style-type: none"> • Positive outcome framing • Receptivity • Decision-making* 	<ul style="list-style-type: none"> • Act and mobilize* • Skills* 	<ul style="list-style-type: none"> • Intentions • Attitudes/modes of behavior
3.	Mitchell (2007)	<ul style="list-style-type: none"> • Opportunity spotting* • Perspectives 	<ul style="list-style-type: none"> • Capabilities* • Exploiting opportunities* 	<ul style="list-style-type: none"> • Attitudes*
4.	Culkin & Mallick (2011)	<ul style="list-style-type: none"> • Thinking* 	<ul style="list-style-type: none"> • Communicating • Organizing • Learning 	<ul style="list-style-type: none"> • Feelings*
5.	Haynie et al. (2010)	<ul style="list-style-type: none"> • Metacognition and cognitive strategies • Reflective of motivation • Cognitive adaptability • Self-regulation* • Decision heuristics • Awareness 	<ul style="list-style-type: none"> • Ability to sense • Act and mobilize* • Strategic skills 	<ul style="list-style-type: none"> • Goals* • Motives • Needs • Motivated tactician*
6.	Ireland et al. (2003)	<ul style="list-style-type: none"> • Opportunity spotting* • Alertness* • Option weighing* • Think entrepreneuriall y* • Capturing the benefits of uncertainty • Perception • Flashes of superior insight 	<ul style="list-style-type: none"> • Ability to sense • Act and mobilize* 	

7.	Kyrgidou & Petridou (2011)	<ul style="list-style-type: none"> • Opportunity spotting* • Focus on creativity and renewal 	<ul style="list-style-type: none"> • Competence exploration • Managing resources strategically • Creating innovation* • Executing competitive advantages • Set of actions to structure and bundle resources 	
8.	Zur (2015)	<ul style="list-style-type: none"> • Opportunity spotting* • Alertness* • Real options logic* • Entrepreneurial framework • Dealing with risks 	<ul style="list-style-type: none"> • Goal setting skills 	<ul style="list-style-type: none"> • Attitudes* • Passion
9.	McMullen & Kier (2016)	<ul style="list-style-type: none"> • Promotion focus • Opportunity spotting* • Adaptability • Self-regulation* • Decision-making* • Validation of alternatives 	<ul style="list-style-type: none"> • Ability to sense • Act and mobilize* • Planning • Exploit profit opportunities* 	<ul style="list-style-type: none"> • Goals* • Motivation* • Commitment
10.	Shams & Kaufmann (2016)	<ul style="list-style-type: none"> • Knowledge streams* • Accept uncertainty and change* 	<ul style="list-style-type: none"> • Capabilities* • Ability to take calculated risks 	
11.	Smith et al. (2009)	<ul style="list-style-type: none"> • Scripts • Cognitive skills • Decision-making* • Social cognition 		
12.	Täks et al. (2014)	<ul style="list-style-type: none"> • Think like entrepreneurs* • Orientation toward entrepreneurial activities • Dealing with uncertainty and change* 	<ul style="list-style-type: none"> • Skills* • Pursuing innovation* 	
13.	Wright (2001)	<ul style="list-style-type: none"> • Thinking entrepreneuriall y* 	<ul style="list-style-type: none"> • Strategic decision-making skills 	<ul style="list-style-type: none"> • Affect* • Motivation* • Self-starting attitude

				<ul style="list-style-type: none"> Goals*
14.	Campos et al. (2017)	<ul style="list-style-type: none"> Cognition Anticipating on problems Overcoming setbacks Planning for opportunities Future orientation Feedback cycles 	<ul style="list-style-type: none"> Set of entrepreneurial skills* Growing a business Pursuing innovation* Identify and exploit opportunities ability* 	
15.	Laalo & Heinonen (2016)	<ul style="list-style-type: none"> Thinking* Responsibility Autonomy Accept uncertainty and change* 	<ul style="list-style-type: none"> Skills* 	<ul style="list-style-type: none">
16.	Makimurto-Koivumaa & Belt (2016)	<ul style="list-style-type: none"> Flexibility Belief in one capabilities Seeing possibilities Cognitive knowledge processing Curiosity Uncertainty tolerant* Creativity 	<ul style="list-style-type: none"> Skills* Active Ability to be dynamic 	<ul style="list-style-type: none"> Positive attitude Self-efficacy Motivation* Affect* Self-confidence Emotions* Feelings* Personal growth Willingness
17.	Noble (2015)	<ul style="list-style-type: none"> Knowledge* Recognizing opportunities* Risk-seeking* Rational Myopia Thinking* Conscious Unconscious Tacit knowledge Decision-making* Judging Beliefs* Self-reflection Metacognition* 	<ul style="list-style-type: none"> Ability* Skills* 	<ul style="list-style-type: none"> Emotions*
18.	Patel & Mehta (2016)	<ul style="list-style-type: none"> Thinking* Effectual reasoning Discovery driven planning Risk-seeking* 	<ul style="list-style-type: none"> Utilizing abilities* Communication* Learning* 	

		<ul style="list-style-type: none"> • Metacognition* • Resilience 		
19.	Urban et al. (2011)	<ul style="list-style-type: none"> • Opportunity recognition* • Thinking* 	<ul style="list-style-type: none"> • Dynamic learning • Ability to sense • Act and mobilize* • Ability* 	

Table 3			
ENTREPRENEURIAL MINDSET DEFINITION ACE VALUE			
Definition	Description	Reference	Ace Concepts Value
1. The ability to rapidly sense, act, and mobilize, even under highly uncertain conditions.	To be intuitive, act, be agile, exploit opportunity.	Ireland et al. (2003).	Spade ***** Heart * Diamond ***** Club *****
2. Metacognitive model reflecting on: 1. Awareness, 2. Strategy, 3. Monitoring.	1. Self-aware, formulate and evaluate multiple alternatives. 2. Adapting to uncertain situations and changes. 3. Learned and can be enhanced.	Haynie et al. (2010).	Spade ***** Heart * Diamond ***** Club *****
3. Cognitive tuning and goal orientation; heuristic-based decision logic; alertness; prior knowledge; social interaction; metacognition; cognitive adaptability.	Attributes and traits, education, strategic entrepreneurship, and resource-based theory combined contribute to EMS. Associated with thinking and with action to link resources and exploit opportunities.	Naumann (2017).	Spade ***** Heart ** Diamond ***** Club *****
4. Five Factor Model (FFM). Personality characteristics and entrepreneurial outcomes. Entrepreneurial Mindset Profile (EMP).	Development of an EMS profile that provides a measure tool. Connected to outcomes and is personality based.	Davis et al. (2016).	Spade ***** Heart ** Diamond ***** Club *****

<p>5. A way of thinking or an ability to capture entrepreneurial opportunities in an uncertain situation. Entrepreneurial mindset can be improved through training and can be considered as a mind habit that requires learning to shape.</p>	<p>The EMS is one type of personal cognitive variable influenced by entrepreneurial culture, entrepreneurship education, and extra-curricular activities. Entrepreneurial mindset habits include:</p> <ul style="list-style-type: none"> - Alertness to opportunity - Risk propensity - Ambiguity tolerance - Dispositional optimism. 	<p>Cui et al. (2021).</p>	<p>Spade ***** Heart *** Diamond ***** Club *****</p>
<p>6. One type of personal cognitive variable that is influenced by entrepreneurial culture and entrepreneurship education Hypothesis: Entrepreneurial mindset positively influences entrepreneurial intention. Entrepreneurial mindset mediates the influence of entrepreneurial culture and entrepreneurial intention.</p>	<p>Links entrepreneurial education as impacting mindset shifts and emotional changes which affect student intentions.</p>	<p>Saparuddin et al. (2021).</p>	<p>Spade ***** Heart **** Diamond *** Club *****</p>
<p>7. A constellation of noncognitive skills that empower students to recognize opportunities, overcome and learn from setbacks, and</p>	<p>Noncognitive skills include: recognizing opportunities, overcoming barriers and learning from them, and transferable skills.</p>	<p>Rodriguez & Lieber (2020).</p>	<p>Spade ***** Heart * Diamond ***** Club *****</p>

apply these skills to future careers, which may include starting one's own business.			
8. We posit that it is the interaction of dispositional beliefs and opportunity beliefs that form EM and generate entrepreneurial behaviors. As such, for any given actor, we define EM as the dispositional and opportunity-based schema that stimulate goal-oriented entrepreneurial behavior.	Those making entrepreneurial decisions are likely influenced by a host of potential internal contextual factors that may influence both the formation and enactment of their EMS.	Pidduck et al. (2021).	Spade **** Heart * Diamond *** Club *****
9. Come up with new ideas, solve problems, generate creative solutions, and take action to pursue opportunities.	Proposed "macro" view of EMS consisting of three components: the cognitive aspect, the behavioral aspect, and the emotional aspect	Kuratko et al. (2020).	Spade *** Heart ** Diamond *** Club ****
10. EM concerns the combination of an individual's ability and willingness, thus more than only a cognitive mindset or something leading up to behavior, and more than just the willingness of an individual to engage in entrepreneurial initiatives.	The concepts concern entrepreneurialness, entrepreneurial intention, entrepreneurial cognition, entrepreneurial attitude, and entrepreneurial imaginativeness. EMS concerns an ability that people can develop but is context-dependent and attained over various stages of development.	Hattenberg et al. (2021).	Spade ***** Heart *** Diamond ***** Club *****

*Ace values are determined by the author's focus of each EMS definition and the correlation to the Ace concepts, with 5 stars showing high levels of correlation and 1 star showing minimal levels of correlation.			
Action–Spades			
Passion–Hearts			
Clarity–Diamonds			
Opportunity–Clubs			

Ace	Visual Imagery	Entrepreneurship Component	Personality Traits	Lesson	Example	Explanation
Diamonds	CLARITY Goal Objective Aspiration	Aspirational ambition	Determined Focused	Identify the objective	I want to achieve...	Having a clear understanding about your goal and objective.
Clubs	OPPORTUNITY Strategy Resources	Opportunity identification	Interpersonal Opportunistic Entrepreneurial	Identify the opportunity	I can see potential in...	Understanding what opportunity is and how to grow potential.
Spades	ACTION Effort Approach Plan	Action-orientated determination	Driven Resilient Hardworking Persistent	Recognize the effort	In order to accomplish my goal, I need...	Building resilience through trial and error, and perseverance.
Hearts	PASSION Cause Rationale Purpose	Purpose	Resolute Passionate Empathetic	Maintain the purpose	Because...	Staying focused on the rationale behind the objective to ensure motivation.

Visual Methods of Learning

When taking into consideration the best methods of teaching the entrepreneurial mindset concepts to secondary school learners (13-18 year old), a visual method of learning was deemed as the best fit for a strong foundation of learning suitable for creative reflections (Clarke & Holt, 2017; Hyerle & Alper, 2011; Young & Barrett, 2001). Verbal impressions aren't able to exceed the processing that visual impressions can awaken due to the evolutionary part of the human brain that sees visual images surpass words and texts in learning arenas (Harper, 2002; Clarke & Holt, 2017; Colicchia & Strozzi, 2012). Clarke & Holt (2017) go further to claim that using visual methods such as imagery can support the development of entrepreneurs. Using visual

imagery is a useful tool in the development of learner understanding, thought development and motivation. As explained by Ellborg (2018): *“The use of images as a tool in education can thus help students visualize subjective perceptions and thoughts around motivation, create activity, connect the learning situation to the students’ everyday life as well as providing space for reflection”*. Ellborg (2018) eloquently describes how by using visual imagery to reinforce learning, this method can also allow opportunities to reflect and develop further thoughts on the learning topic.

Using visual imagery as the method of teaching the entrepreneurial mindset program was also relevant, considering the demographic of learners was those aged between 13 years and 18 years old. Visual imagery helps to capture and maintain attention, to grow interest, to reinforce learning principles and to allow for the critical element of learner feedback and understanding.

Four Key Components of Entrepreneurial Success

The Four Aces Framework has been developed as a teaching and learning tool that is embedded in the researcher’s entrepreneurial mindset program. The framework encapsulates the critical entrepreneurship traits and behaviors that support successful entrepreneurial outcomes. Although Hattenberg et al. (2021) go further to emphasize that *“rather than viewing an individual as either entrepreneurial or not, it is important to have a more nuanced explanation as shown by the willingness and ability aspects in a dynamic process”*, highlighting that the purpose behind the learning of the EMS is more than just entrepreneurial outcomes, but in being able to navigate unpredictable contexts for a positive outcome. Using a visual approach to integrating, embedding and retention, the four aces from a deck of cards have been categorized into four categories that describe the foundations for successful entrepreneurial endeavors. Using the Four Aces Framework allows for key concepts to be taught and for learners to recall, use and apply the skills and behaviors necessary to achieve entrepreneurial success. The Four Aces Framework comprises four key entrepreneurship activities: diamonds-aspirational ambition, clubs-opportunity identification, spades-action-orientated determination, and hearts-purpose. The visual approach to ideation and in building the entrepreneurship traits and behaviors of learners, and ultimately the growth of the entrepreneurial mindset development (in this case the four aces), is an intentional attempt to embed entrepreneurship learning and support into the learner’s contextual understanding of the entrepreneurial mindset.

The Four Aces Framework exploits entrepreneurship methods and activities to support entrepreneurial outcomes in all areas of an individual’s life.

Success itself is a contextual concept that is measurable through individual determination (Kramer, 2005; Brenneke, 2010). To determine what success looks and feels like can be very different for different people and contexts. Watson (2001) differentiates between the chief executive, who has a strong desire to accomplish or succeed; an entrepreneur, who is driven by a need to create or express; and a visionary, whose desire is to make a difference in the world. Succeeding through accomplishment, creation or making a difference can be used as tools to measure the entrepreneurial outcomes of entrepreneurs, but is still arguably contestable.

Differentiating between entrepreneurial traits and entrepreneurial behaviors (Poon et al., 2006; Rauch & Frese, 2007) is also important because this Four Ace Framework focuses on both traits and behaviors as a reciprocal model of teaching and learning to support the teaching and learning of the entrepreneurial mindset.

Introducing the Ace of Diamonds

The Ace of Diamonds represents aspirational ambition, and is defined in this project as “*recognizing the goal an individual wants to achieve based on their aspirations or desires to make an impact, grow or innovate*”. The Ace of Diamonds is the first principle in the framework because it determines and frames the progress of the following principles. Having clear aspirations and setting explicit goals is fundamental to successful entrepreneurial outcomes and the development of mindset (Kourilsky, 1995; Gasse, 1985; Born & Altink, 1996). From a visual image perspective, the diamond is representative of success, attainment, material wealth, and clarity. It is anticipated that these representations will embed the concepts of aspiration, goal, and determination in the learning environment. Individuals with an entrepreneurial intention exhibit psychological and cognitive traits that are different from those of other people (Carland & Carland, 2001). The Ace of Diamonds component consists of the elements of goals, aspirations, and priorities with the corresponding personality traits of being determined, focused, and innovative.

Introducing the Ace of Clubs

The Ace of Clubs has a symbol associated to it that resembles a keyhole. The keyhole symbolizes a narrowing of focus to identify potential opportunities. After the identification of the goal set in the diamond principle, a narrowing of focus is required to identify or recognize the opportunity or opportunities required to support the attainment of the objective (Kourilsky, 1995). Kourilsky (1995) further emphasizes the three signature areas of entrepreneurship as the identification of opportunity, the marshaling and commitment of resource, and the implementation and building of opportunity. Cantillon (1931) identified that maximizing opportunities and resources are important to the entrepreneurship journey. Developing an understanding of what opportunities are, how to identify them and how to maximize them is an essential part of entrepreneurial success (Kirzner, 1973).

Recognizing and maximizing opportunities are arguably the most critical principles of entrepreneurship success (Shane, 2000; Alvarez & Busenitz, 2001; Ardichvili et al., 2003; Filion, 2021). A successful entrepreneur should be able to maximize resources and opportunities (Cantillon, 1931), be innovative with opportunities (Shackle, 1979), ensure a good understanding of opportunities (Kirzner, 1973) and be continuously seeking opportunities (Cotton & Gibb, 1992; Kourilsky, 1995). Bolton (2004) also state that the manner in which opportunities are perceived can determine the direction and focus of the opportunity and the exploitation of the idea.

Seeking and exploiting opportunities are behaviors that individuals can learn to develop, and those who are inclined to risk-taking and who are willing to pursue opportunities with higher risk levels are open to significantly more learning, knowledge, and experiential development (Dweck, 1999). Welsh et al. (2013) compare entrepreneurs who have a propensity toward performance with those with a propensity to learning, stating that: “*Individuals with a performance orientation seek validation; those with a learning orientation seek growth*”.

Introducing the Ace of Spades

The Ace of Spades represents the physical act of action through the symbolism of the spade as a tool. After identifying the aspirational goal (diamonds) and creating or maximizing

opportunity (clubs), it is necessary to take the required action toward achieving those goals. Action, as a creative process, is an important factor in the process of entrepreneurial activity (Kent, 1990; Bolton, 2004). Developing a plan for action is a creative process that should align with opportunities and the necessary action to achieve the desired outcomes. Gasse, (1985); Born & Altink (1996); Kourilsky (1995) emphasize the importance of energy and commitment in the engagement of entrepreneurial action. Being flexible and committed allows for the adjustment of actions to accommodate necessary changes, and through resilience, a mindset of persistence emerges. Innovative approaches to production (Schumpeter, 1934) also highlight that an adaptable and resilient mindset is important to successful entrepreneurial action. Welsh et al. (2013) further emphasize that the best environment for engagement and innovative activities is one that provides robust support. Supportive environments allow for vulnerability, then trust to grow to assist in leadership and direction (Brown, 2018).

Introducing the Ace of Hearts

The Ace of Hearts is arguably the most important component of the Four Aces Framework. The heart is representative of passion and purpose, and aligned to the rationale behind the other three ace concepts of diamonds, clubs and spades. But a stronger focus than passion and purpose is the concept of love. To truly “love” you must be able to self-reflect and understand your own values, strengths and ideals. Through this awareness, an individual is able to identify their passion and the power and meaning in the purpose behind their ventures. Personality traits and corresponding behaviors are significant factors within the Ace of Hearts component and will now be discussed further.

Through understanding entrepreneurial personalities and behaviors, the appropriate aspirations, plans and actions can be determined to supporting entrepreneurial success. When discussing entrepreneurial approaches, there are four types of entrepreneurs that are described by Miner (1996) that use various methods of achieving success: A Personal Achiever, who uses a strong locus of control; the Salesperson, with a strong communication and sales focus; the Real Manager, who has a forceful persuasion and a competitive approach; and the Expert Idea Generator, who focuses on innovation and vision. These four types of entrepreneurial approaches consist of entrepreneurial personality traits that include locus of control, competitiveness, being innovative, and being forceful. Similarly, Bolton (2004) note the 16 Myers–Briggs personality types in relation to traits and behaviors, arguing that talent, temperament and technique contribute to entrepreneurial success.

McGrath & MacMillan (2000) outline four concepts in alignment with the Four Aces concept: establishment of the entrepreneurial goal, a plan, opportunity identification and action/execution. In the research completed for the development of the Four Aces concept, there are few references that include the entrepreneurial mindset element of passion or purpose, and little mention of love. Klyver et al. (2012) share their entrepreneurial process factors as opportunity, intention, feedback, planning, resources, networking and motive. These factors relate to three of the four ace concepts: Diamonds-intention and motive; clubs- opportunity; spades-networking, planning and resources, without mention of the fourth concept of hearts-passion and purpose. Similarly, Fayolle’s Process Model (2003) refers to three of the four aces: diamonds-intention; clubs-propensity and indifference; and spades- action and the results of action.

There is research that outlines the entrepreneurial spirit, which one would expect to have some connection to passion, love or purpose. Albert & Marion (1997), as cited in Fayolle &

Klandt (2006), define the entrepreneurial spirit as the acts of “*identifying opportunities, in gathering resources of various natures, in order to create a wealth that meets a solvable demand*”. This focus on opportunities, resources and solving demands omits the importance of passion, love or purpose. In the same way, Kirkwood (2007) discusses factors to ignite the entrepreneurial spirit and describes this as the motivation for becoming an entrepreneur. Furthermore, the entrepreneurial spirit is defined as having the basic characteristic of an entrepreneur, who is different from the manager or the inventor (Fayolle, 2003), regarding the activation of mental images to allow an organization to develop (Fonrouge, 2002; Verzat et al., 2003).

Entrepreneurs should have a clear connection to purpose for what they do, or have a passion for the outcome, the concept or the journey. They have to find their passion in the concept that drives the purpose and intent behind the action to recognize the opportunity identification in order to obtain fulfillment (McClelland, 1961; Koh, 1996). Where accidental success occurs, there may be an underlying sense of love, passion or purpose, and other times this is developed over time. Duckworth (2017) describes passion as an energetic, years-long practice of cultivation and refinement, stating that “*just because you love something doesn't mean you'll be good at it without work*”.

The Ace of Hearts is not always required to achieve success, and, on its own, success won't be achieved, but it can drive success and will contribute to feelings of personal wellbeing and satisfaction. The purpose and drive behind the focus of operation and of education is to grow knowledge and experience, but also for the greater good of our society. Zhang (2018) comments: “*Education is not only the means to transform a society from one stage of economic development to another, but also an important driver of our humanity and civilization development*”.

Sharing the education of the entrepreneurial mindset goes a step further in the lives of young learners by providing them with the confidence and capability to take chances, continue their journey of life-long learning, and to take opportunities with courage.

The concept of the Ace of Hearts requires an ability to believe in oneself and “*the belief that, within limits, an individual can determine one's own fate*” (Ulrich, 2001). This internal locus of control is an important element in entrepreneurial outcomes because the belief and reflection of the self can influence the effort and direction of one's action (Rotter, 1966; Brockhaus, 1982) and make lasting ripples in their lives.

Ulrich (2001) also discusses an external locus of control as being the belief that the fate of an individual is influenced by external factors. Environmental influences such as economic and social conditions have an impact on entrepreneurial advancement, as does culture (Hofstede et al., 2004; Huayller et al., 2015). When an organization is led and directed with clear passion and purpose, a positive culture is created. Having staff that are engaged with their own drive for passion and purpose, creates an organizational culture that can have positive effects on entrepreneurial outcomes and has a significant impact on the development of personality (Baum et al., 2007).

Recognizing the environmental and internal locus of controls can highlight to an individual what factors are impacting their self-belief and support the identification of appropriate actions to best support entrepreneurial outcomes (Bolton, 2004). This self-reflection is important to building the internal belief that an individual can continue to grow and learn and improve (Dweck, 1999). As internal self-belief grows, so too will the risk-stakes that one is comfortable with, and, therefore, the locus of control boundaries can increase and create more and more opportunities to extend experiences and knowledge.

Strong self-belief and awareness coupled with intention and passion are important aspects of entrepreneurial personality traits. Ulrich (2001) outlines four entrepreneurial personality traits: the need to achieve with a desire for goal setting and identifying solutions; the ability to self-reflect and have self-belief, entrepreneurial action and a willingness to take risks; tolerance of ambiguity; and being able to take risk and navigate uncertainty. Knight Frank (1921) also argues that being able to navigate the unknown is necessary to successful entrepreneurial outcomes. In alignment to navigating uncertainty, McClelland (1961) and Sexton & Bowman (1986) also emphasize the need for a propensity to risk and risk-taking, while Hmielseki and Corbett (2006) similarly recognize that the ability to improvise opportunities and solutions is critical to successful entrepreneurship engagement. Social entrepreneurs are willing to take risks and to pursue their ideas with determination in order to make a difference in social and environmental terms (Bornstein, 2007; Waddock, 2008; Brenneke, 2010).

Psychological personality traits can also influence entrepreneurship outcomes and indeed entrepreneurs. Such traits include: entrepreneurial values, attitudes and needs (Koh, 1996); the need for achievement (McClelland, 1961; Littunen, 2000); and an ability to improvise opportunities and solutions (Hmieleski & Corbett, 2006). Social entrepreneurs are described as bringing “*inspiration, creativity, direct action, courage, and fortitude*” (Martin & Osberg, 2007), while Schultz (1975) reinforces that resilience and fortitude are vital to an entrepreneur’s mindset. Other important traits of the entrepreneur include the entrepreneurial spirit (Kourilsky, 1990), creative thinking (DeBono, 1992), and persistence (Kourilsky, 1980).

SUMMARY

The four aces represent the key concepts of entrepreneurial mindset education: aspiration; opportunity identification and harnessing; effort and planning; and purpose and passion. The Four Aces Framework provides learning tools that can aide entrepreneurial mindset education for all learners, including secondary school learners who are developing the skills and experience necessary for exploring entrepreneurship avenues. While the contribution to entrepreneurial outcomes for learners can be impacted through teaching entrepreneurial mindset concepts, there is also the added benefit of supporting the engagement of learners while in school and their attitudes toward learning in a holistic sense.

Implementation of the Four Aces has no limits in its integration in entrepreneurship programmes or indeed the focus on only entrepreneurial activities, the Four Aces Framework is offered as a tool to teaching mindset qualities that have a positive impact on a learner’s aspiration, entrepreneurial or otherwise.

In an effort to summarize the Four Aces Framework, I have designed a table, the Entrepreneurial Four Aces Framework (Table 4), that outlines the concepts of the framework alongside learning examples, explanations and lesson guidelines.

On reflection, this article uses Ireland et al. (2003) definition of the EMS: “*the ability to rapidly sense, act, and mobilize, even under highly uncertain conditions*”. I would add to this definition to include the intrinsic passion and motivation of the individual: the ability to rapidly sense (diamond), act (spade), and mobilize (spade), even under uncertain conditions (club), with purpose (heart). The addition of the Ace of Hearts provides the extra motivation and context to start and finish an activity, entrepreneurial or otherwise. The addition of purpose to this EMS definition also allows the individual to reflect and celebrate their learning’s, their achievements, and the relationships developed along the way.

CONCLUSION

When identifying of the four key principles of developing entrepreneurial mindset education, it must be acknowledged that there are a number of entrepreneurship activities that are important to entrepreneurial success that are not included in this Four Aces Framework. It must also be acknowledged that although entrepreneurial success can be achieved by successfully implementing the first three aces, the individual determination of success will be limited without the Ace of Hearts as a fundamental part of the implementation and learning process.

Including the Ace of Hearts may create some conflict in an otherwise orderly perception of entrepreneurship education that doesn't always acknowledge love and passion. Entrepreneurial behavioral characteristics are related to elements of perseverance and determination, being able to navigate risks, set goals, and operate with integrity, and be creative and independent. Address three of the four aces: opportunities, action and effort, and goals; however, there is no mention of the Ace of Hearts, which is related to passion and purpose. This research argues that the concept contained within the Ace of Hearts is necessary in entrepreneurship education and in teaching the entrepreneurial mindset. It is hoped that offering these entrepreneurial mindset concepts early in a person's learning journey will also contribute to their successful entrepreneurial endeavours. With passion and purpose in entrepreneurial drivers, people have self-satisfaction, a sense of achievement and, ultimately, entrepreneurial benefit, improvement or advancement.

In essence, the Four Aces Framework hopes to provide a structure for growing young entrepreneurial potential and successful entrepreneurship activities through deliberate and intentional teaching of the entrepreneurial mindset.

REFERENCES

- Alvarez, S.A., & Busenitz, L.W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27(6), 755-775.
- Amit, R., Glosten, L., & Muller, E. (1993). Challenges to theory development in entrepreneurship research. *Journal of Management Studies*, 30(5), 815-834.
- Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.
- Baron, R.A. (2014). *Essentials of entrepreneurship: Evidence and practice*. Edward Elgar Publishing.
- Baum, J.R., & Locke, E.A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587.
- Baum, J.R., Frese, M., Baron, R.A., & Katz, J.A. (2007). Entrepreneurship as an area of psychology study: An introduction. *The Psychology of Entrepreneurship*, 1, 18.
- Bjørnskov, C., & Foss, N.J. (2016). Institutions, entrepreneurship, and economic growth: what do we know and what do we still need to know?. *Academy of Management Perspectives*, 30(3), 292-315.
- Bodde, D.L. (2004). Doing Good by Doing Well: Entrepreneurship in the Hydrogen Transition. In *The Hydrogen Energy Transition* (pp. 105-119). Academic Press.
- Bolton, B. (2004). *Entrepreneurs: Talent, Temperament, Technique Ed. 2*. Taylor & Francis.
- Born, M.P., & Altink, W.M. (1996). The importance of behavioural and situational characteristics for entrepreneurial success: an international rating study. *International Journal of Selection and Assessment*, 4(2), 71-77.
- Bornstein, D. (2007). *How to change the world: Social entrepreneurs and the power of new ideas*. Oxford University Press.
- Brenneke, M. (2010). Social Intrapreneurs – Bottom-Up Social Innovation. *International Review of Entrepreneurship*, 8(2), 157-176.
- Brockhaus, R.H. (1982). The psychological of the entrepreneur. In C.A. Kent, D. L. Sexton, & K.H. Vesper (Eds.), *Encyclopedia of Entrepreneurship* (39-57). Prentice-Hall.

- Brown, B. (2018). *Dare to Lead: Brave Work. Tough Conversations. Whole Hearts*. Random House.
- Brush, C., Neck, H., & Greene, P. (2015). A practice-based approach to entrepreneurship education. *Evolving entrepreneurial education: Innovation in the Babson classroom*, 35.
- Camelo-Ordaz, C., Fernández-Alles, M., Ruiz-Navarro, J., & Sousa-Ginel, E. (2012). The intrapreneur and innovation in creative firms. *International Small Business Journal*, 30(5), 513-535.
- Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H.C., McKenzie, D., & Mensmann, M. (2017). Teaching personal initiative beats traditional training in boosting small business in West Africa. *Science*, 357(6357), 1287-1290.
- Cantillon, R., Higgs, H., & Jevons, W.S. (1931). *Essai sur la nature du commerce en général: Edited with an English translation and other material by Henry Higgs*. Macmillan.
- Carland, J.C., & Carland, J.W. (2001). Entrepreneurship education: An integrated approach using an experiential learning paradigm. *Entrepreneurship Education: A global view*, 94, 103.
- Carree, M., Van Stel, A., Thurik, R., & Wennekers, S. (2002). Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976–1996. *Small business economics*, 19(3), 271-290.
- Chell, E., Haworth, J., & Brearley, S. (1991). *The entrepreneurial personality* (Vol. 16). London: Routledge.
- Clarke, J., & Holt, R. (2017). Imagery of ad-venture: Understanding entrepreneurial identity through metaphor and drawing. *Journal of Business Venturing*, 32(5), 476-497.
- Colicchia, C., & Strozzi, F. (2012). Supply chain risk management: a new methodology for a systematic literature review. *Supply Chain Management: An International Journal*. 17(4), 403–418.
- Cotton, J., & Gibb, A.A. (1992). An evaluation study of enterprise education in the North of England. *Enterprise and Industry Education Unit, Durham University Business School, Durham City, UK*.
- Cui, J., Sun, J., & Bell, R. (2021). The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes. *The International Journal of Management Education*, 19(1), 100296.
- Culkin, N., & Mallick, S. (2011). Producing work-ready graduates: The role of the entrepreneurial university. *International Journal of Market Research*, 53(3), 347-368.
- Davis, M.H., Hall, J.A., & Mayer, P.S. (2016). Developing a new measure of entrepreneurial mindset: Reliability, validity, and implications for practitioners. *Consulting Psychology Journal: Practice and Research*, 68(1), 21.
- De Vries, M.K. (1977). The entrepreneurial personality: A person at the crossroads. *Journal of management studies*, 14(1), 34-57.
- Dewey, J. (1934). The supreme intellectual obligation. *Science*, 79(2046), 240-243.
- Dhliwayo, S., & Van Vuuren, J.J. (2007). The strategic entrepreneurial thinking imperative. *Acta Commercii*, 7(1), 123-134.
- Diegoli, R.B., & Gutierrez, H.S.M. (2018). Teachers as entrepreneurial role models the impact of a teacher's entrepreneurial experience and student learning styles in entrepreneurial intentions. *Journal of Entrepreneurship Education*, 21(1), 1-11.
- Diener, E., & Biswas-Diener, R. (2011). *Happiness: Unlocking the mysteries of psychological wealth*. John Wiley & Sons.
- Duckworth, A. (2017). *Grit: The power of passion and perseverance*. Ebury Publishing.
- Dweck, C. (2012). *Mindset: Changing the way you think to fulfil your potential*. Hachette UK.
- Dweck, C.S. (1999). *Self-theories: Their role in motivation, personality, and development*. Psychology Press.
- Dweck, C.S. (2006). *Mindset: The new psychology of success (Updated edition)*. Lulu Press, Inc.
- Ellborg, K. (2018). Visualizing entrepreneurship—using pictures as ways to see and talk about entrepreneurship in educational settings. In *Annals of entrepreneurship education and pedagogy—2018*. Edward Elgar Publishing.
- Fayolle, A. (2003). Research and researchers at the heart of entrepreneurial situations. *New Movements in Entrepreneurship*, 35-50.
- Filion, L.J. (2021). *World encyclopedia of entrepreneurship*. Edward Elgar Publishing.
- Galloway, L., & Kelly, S.W. (2009). Identifying entrepreneurial potential? An investigation of the identifiers and features of entrepreneurship. *International review of entrepreneurship*, 7(4), 1-24.
- Gapp, R., & Fisher, R. (2007). Developing an intrapreneur-led three-phase model of innovation. *International Journal of Entrepreneurial Behavior & Research*.
- Garavan, T.N., & Barra, O. (1994). Entrepreneurship Education and Training Programmes:: A Review and Evaluation—Part 1. *Journal of European Industrial Training*.

- Gartner, W.B. (1990). What are we talking about when we talk about entrepreneurship?. *Journal of Business Venturing*, 5(1), 15-28.
- Gasse, Y. (1985). A strategy for the promotion and identification of potential entrepreneurs at the secondary school level. *Frontiers of Entrepreneurship*, 1, 538-559.
- Gibb, A. (2002). In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews*, 4(3), 233-269.
- Gorman, G., Hanlon, D., & King, W. (1997). Some research perspectives on entrepreneurship education, enterprise education and education for small business management: a ten-year literature review. *International small Business Journal*, 15(3), 56-77.
- Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, 17(1), 13-26.
- Hattenberg, D.Y., Belousova, O., & Groen, A.J. (2021). Defining the entrepreneurial mindset and discussing its distinctiveness in entrepreneurship research. *International Journal of Entrepreneurship and Small Business*, 44(1), 30-52.
- Haynie, J.M., Shepherd, D., Mosakowski, E., & Earley, P.C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of business venturing*, 25(2), 217-229.
- Haynie, M., & Shepherd, D.A. (2007). Exploring the entrepreneurial mindset: Feedback and adaptive decision-making. *Frontiers of Entrepreneurship Research*.
- Henry, C., Hill, F., & Leitch, C. (2005). Entrepreneurship education and training: can entrepreneurship be taught? Part I. *Education+ Training*.
- Hmieleski, K.M., & Corbett, A.C. (2006). Proclivity for improvisation as a predictor of entrepreneurial intentions. *Journal of small business management*, 44(1), 45-63.
- Hofstede, G., Noorderhaven, N.G., Roy, A., Thurik, L.M.U., & Alexander, R.M. (2004). Culture's role in entrepreneurship: self-employment out of. *Innovation, entrepreneurship and culture: The interaction between technology, progress and economic growth*, 162.
- Huayller, R., Stettina, C.J., von Ketelhodt, M., & Katzy, B. (2015). The kindergarten of entrepreneurship: Developing entrepreneurial spirit and skills through community building at universities. In *2015 IEEE International Conference on Engineering, Technology and Innovation/International Technology Management Conference (ICE/ITMC)*.
- Hyerle, D.N., & Alper, L. (Eds.). (2011). *Student successes with thinking maps®: School-based research, results, and models for achievement using visual tools*. Corwin Press.
- Hyett, N., Kenny, A., & Dickson-Swift, V. (2014). Methodology or method? A critical review of qualitative case study reports. *International journal of qualitative studies on health and well-being*, 9(1), 23606.
- Ireland, R.D., Hitt, M.A., & Sirmon, D.G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of management*, 29(6), 963-989.
- Kent, C.A. (1990). Introduction: Educating the Heffalump. *Entrepreneurship Education: Current Developments, Future Directions*. AK Calvin. New York, USA, Quorum Books.
- Kirkwood, J. (2007). Igniting the entrepreneurial spirit: is the role parents play gendered?. *International Journal of Entrepreneurial Behavior & Research*.
- Kirzner, I.M. (1973). *Competition and entrepreneurship*. University of Chicago press..
- Klyver, K., Evald, M.R., Nielsen, S.L., & Bager, T. (2012). *Entrepreneurship in theory and practice: Paradoxes in play*. Edward Elgar Publishing.
- Knight Frank, H. (1921). Risk, uncertainty and profit. *книга*.
- Koh, H.C. (1996). Testing hypotheses of entrepreneurial characteristics: A study of Hong Kong MBA students. *Journal of Management Psychology*, 11 (3), 12-25.
- Kourilsky, M. (1980). Predictors of entrepreneurship in a simulated economy. *The Journal of Creative Behavior*, 14(3), 175-198.
- Kourilsky, M. (1990). Entrepreneurial Thinking and. *Entrepreneurship education: Current developments, future directions*, 137.
- Kourilsky, M.L. (1995). *Entrepreneurship Education: Opportunity in Search of Curriculum*.
- Kramer, M.R., & Foundation Strategy Group. (2005). *Measuring innovation: Evaluation in the field of social entrepreneurship*.
- Kuratko, D.F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship theory and practice*, 29(5), 577-597.
- Kyrgidou, L.P., & Petridou, E. (2011). The effect of competence exploration and competence exploitation on strategic entrepreneurship. *Technology analysis & strategic management*, 23(6), 697-713.

- Laalo, H., & Heinonen, J. (2016). Governing the entrepreneurial mindset: Business students' constructions of entrepreneurial subjectivity. *European Educational Research Journal*, 15(6), 696-713.
- Lackey, C.J. (2014). *Relationships between motivation, self-efficacy, mindsets, attributions, and learning strategies: An exploratory study*. Illinois State University.
- Lee, Y., Kreiser, P., Wrede, A.H., & Kogelen, S. (2018). Examining the role of university education in influencing the development of students' entrepreneurship capabilities. In *Annals of Entrepreneurship Education and Pedagogy-2018*. Edward Elgar Publishing.
- Littunen, H. (2000). Entrepreneurship and the characteristics of the entrepreneurial personality. *International Journal of Entrepreneurial Behavior & Research*.
- Luca, M.R. (2017). Entrepreneurial personality and entrepreneurial behaviour. *Bulletin of the Transilvania University of Braşov, Series VII: Social Sciences and Law*, 10(1), 19-28.
- Mäkimurto-Koivumaa, S., & Belt, P. (2016). About, for, in or through entrepreneurship in engineering education. *European Journal of Engineering Education*, 41(5), 512-529.
- Martin, R.L., & Osberg, S. (2007). Social entrepreneurship: The case for definition. 5(2), 28.
- Mauer, R., Neergaard, H., & Linstad, A.K. (2017). Self-efficacy: Conditioning the entrepreneurial mindset. In *Revisiting the entrepreneurial mind* (pp. 293-317). Springer, Cham.
- McGrath, R.G., & MacMillan, I.C. (2000). *The entrepreneurial mindset: Strategies for continuously creating opportunity in an age of uncertainty* (Vol. 284). Harvard Business Press.
- McMullen, J.S., & Kier, A.S. (2016). Trapped by the entrepreneurial mindset: Opportunity seeking and escalation of commitment in the Mount Everest disaster. *Journal of Business Venturing*, 31(6), 663-686.
- Miner, J.B. (1996). *The 4 routes to entrepreneurial success*. Berrett-Koehler Publishers.
- Mukhambetova, A., Camnert, Å.M., & Williams, A. (2019). A design approach to teaching an entrepreneurial mindset. *Design Management Journal*, 14(1), 16-26.
- Mukhtar, S., Wardana, L.W., Wibowo, A., & Narmaditya, B.S. (2021). Does entrepreneurship education and culture promote students' entrepreneurial intention? The mediating role of entrepreneurial mindset. *Cogent Education*, 8(1), 1918849.
- Naumann, C. (2017). Entrepreneurial mindset: A synthetic literature review. *Entrepreneurial Business and Economics Review*, 5(3), 149-172.
- Neck, H.M., & Greene, P.G. (2011). Entrepreneurship education: known worlds and new frontiers. *Journal of Small Business Management*, 49(1), 55-70.
- Oldham, S. (2018). To think in enterprising ways: Enterprise education and enterprise culture in New Zealand. *History of Education Review*. 47(1), 87-101.
- Paço, A.D., & Palinhas, M.J. (2011). Teaching entrepreneurship to children: A case study. *Journal of Vocational Education & Training*, 63(4), 593-608.
- Patel, S., & Mehta, K. (2017). Systems, design, and entrepreneurial thinking: Comparative frameworks. *Systemic Practice and Action Research*, 30(5), 515-533.
- Pidduck, R.J., Clark, D.R., & Lumpkin, G.T. (2021). Entrepreneurial mindset: Dispositional beliefs, opportunity beliefs, and entrepreneurial behavior. *Journal of Small Business Management*, 1-35.
- Poon, J.M., Ainuddin, R.A., & Junit, S.O.H. (2006). Effects of self-concept traits and entrepreneurial orientation on firm performance. *International Small Business Journal*, 24(1), 61-82.
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353-385.
- Robbins, S.P. (1997). *Organizational behavior: Concepts, controversies and applications*. Prentice Hall.
- Robinson, S., Neergaard, H., Tanggaard, L., & Krueger, N. (2016). New horizons in entrepreneurship: from teacher-led to student-centered learning. *Education+ Training*. 58(7-8), 661-683.
- Rodriguez, S., & Lieber, H. (2020). Relationship between entrepreneurship education, entrepreneurial mindset, and career readiness in secondary students. *Journal of Experiential Education*, 43(3), 277-298.
- Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1.
- Sá, C., & Kretz, A. (2015). *The entrepreneurship movement and the university*. Springer.
- Schultz, T.W. (1975). The value of the ability to deal with disequilibria. *Journal of Economic Literature*, 13(3), 827-846.
- Schumpeter, J.A. (1934). *A theory of economic development*. Oxford University Press.

- Sexton, D.L., & Bowman, N.B. (1986). Validation of a personality index: Comparative psychological characteristics analysis of female entrepreneurs, managers, entrepreneurship students and business students. *Frontiers of Entrepreneurship Research*, 1986, 40-51.
- Shackle, G.L.S. (1979). *Imagination and the Nature of Choice*. Columbia University Press.
- Shams, S.R., & Kaufmann, H.R. (2016). Entrepreneurial co-creation: A research vision to be materialised. *Management Decision*, 54(6), 1250–1268.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.
- Shepherd, D.A., Patzelt, H., & Haynie, J.M. (2010). Entrepreneurial spirals: Deviation–amplifying loops of an entrepreneurial mindset and organizational culture. *Entrepreneurship Theory and Practice*, 34(1), 59-82.
- Smith, J.B., Mitchell, J.R., & Mitchell, R.K. (2009). Entrepreneurial scripts and the new transaction commitment mindset: Extending the expert information processing theory approach to entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 33(4), 815-844.
- Täks, M., Tynjälä, P., Toding, M., Kukemelk, H., & Venesaar, U. (2014). Engineering students' experiences in studying entrepreneurship. *Journal of Engineering Education*, 103(4), 573-598.
- Thurik, A.R. (1996). Small firms, entrepreneurship and economic growth. *Small Business in the Modern Economy*, 126–152.
- Ulrich, T.A. (2001). An empirical approach to entrepreneurial-learning styles. In R.H. Brockhaus, G.E. Hills, H. Klandt, & H.P. Welsch, (Eds.), *Entrepreneurship Education: A Global View*. Ashgate Publishing Limited, 147–164.
- Urban, B., Venter, R., & Shaw, G. (2011). Empirical evidence on opportunity recognition behaviours of informal traders. *African Journal of Business Management*, 5(24), 10080-10091.
- van der Kuip, I., & Verheul, I. (2004). Early development of entrepreneurial qualities. *The International Journal of Entrepreneurship Education*, 2 (2), 203-226.
- Verzat, C., Frugier, D., Bachelet, R., & Hannachi, A. (2003). Helping engineers to become entrepreneurs; attitudes, behaviours, beliefs, skills: what are the educational factors of their entrepreneurial spirit?. In *IntEnt 2003 Internationalising Entrepreneurship Education and Training September, 8th–10th 2003 in Grenoble/France*.
- Waddock, S. (2008). Building a new institutional infrastructure for corporate responsibility. *Academy of Management Perspectives*, 22(3), 87-108.
- Watson, L. (2001). *How they Achieved: Stories of personal achievement and business success*. John Wiley & Sons.
- Welsh, M.A., Dehler, G.E., & Murray, D.L. (2013). Learning about and through aesthetic experience: Understanding the power of experience-based education. *The handbook of experiential learning & management education*. Oxford, Oxford UP, UK.
- Winkel, D. (2013). The changing face of entrepreneurship education. *Journal of Small Business Management*, 51(3), 313-314.
- Wright, M. (2001). Creating and growing wealth: Sue Birley on entrepreneurship and wealth creation. *Academy of Management Perspectives*, 15(1), 37-39.
- Young, L., & Barrett, H. (2001). Adapting visual methods: action research with Kampala street children. *Area*, 33(2), 141-152.
- Zhang, Y. (2018). Business and educational entrepreneurship: purpose and future. In *Annals of Entrepreneurship Education and Pedagogy–2018*. Edward Elgar Publishing.
- Zupan, B., Cankar, F., & Setnikar Cankar, S. (2018). The development of an entrepreneurial mindset in primary education. *European Journal of Education*, 53(3), 427-439.
- Žur, A. (2015). Social problems as sources of opportunity–antecedents of social entrepreneurship opportunities. *Entrepreneurial Business and Economics Review*, 3(4), 73-87.

Received: 08-Jan-2022, Manuscript No. AJEE-22-10799; **Editor assigned:** 11-Jan-2022, PreQC No. AJEE-22-10799(PQ); **Reviewed:** 25-Jan-2022, QC No. AJEE-22-10799; **Revised:** 23-Apr-2022, Manuscript No. AJEE-22-10799(R); **Published:** 30-Apr-2022