DEM NGULON–Based Symbolic Modeling as a Group Guidance Intervention for Entrepreneurial Behavior Development

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Doi: 10.31316/g-couns.v10i03.8941

Abstrack

This study aims to develop and examine the effectiveness of the DEM NGULON-Based Symbolic Modeling technique in fostering entrepreneurial behavior among high school students. Although Symbolic Modeling has been shown to strengthen motivation and self-efficacy, limited research has examined how integrating local cultural values can enhance its impact in entrepreneurship education. Using a Collaborative Action Research approach, the intervention was implemented over four cycles, with guidance counselors and students as partners. The technique was structured into six reflective stages to support the internalization of values. Five aspects of entrepreneurial behavior were measured: innovativeness, risk-taking, hard work, managerial ability, and decision-making. The results indicate significant improvements in innovativeness, risk-taking, and managerial ability during Cycle I ($p < 0.05$), while other aspects showed no significant change. In Cycles II to IV, changes continued in a consolidation pattern. Students with lower initial scores recorded the greatest improvements. These findings highlight the contribution of positioning DEM NGULON as a culturally grounded reinforcement mechanism within modeling-based guidance. The study suggests that this approach can serve as an early catalyst for behavioral change and offers a relevant framework for entrepreneurship education that aligns psychological learning processes with local values.

Keywords: action research, DEM NGULON, entrepreneurial behavior, high school students, symbolic modeling

Article info
Received December 2025, Revised January 2026, Accepted January 2026, Published March 2026

How to Cite:
Arif, A., Solehuddin, M., Suherman, U., & Yustiana, Y. R. (2026). DEM NGULON–Based Symbolic Modeling as a Group Guidance Intervention for Entrepreneurial Behavior Development. G-Couns: Jurnal Bimbingan Dan Konseling, 10 (03), July, 2126-2143. https://doi.org/10.31316/g-couns.v10i03.8941

Available online at https://journal.upy.ac.id/index.php/bk/index

INTRODUCTION

Entrepreneurship is a fundamental driver of innovation, economic growth, and social resilience across various development contexts. Prior studies demonstrate that entrepreneurial activity contributes significantly to job creation, productivity gains, and societal adaptability to global change (Audretsch & Keilbach, 2004)(Acs et al., 2013). Despite its increasingly recognized importance, efforts to foster entrepreneurial behavior among young people, particularly senior high school students, continue to face multiple obstacles (Sandhu et al., 2011)(Iskandar, I., 2018)(Arranz et al., 2019). Many entrepreneurship programs still fail to connect theoretical concepts with students' sociocultural realities, leading to implementation that is often perceived as irrelevant and limited in impact (Amalia, 2016; Suhartono, 2024; Mudji Hartati, 2023). These challenges are especially evident in regions with strong cultural identities, such as the Bangka Belitung Islands, where substantial culture-based economic potential has not yet been optimally integrated into formal education.

The development of entrepreneurial behavior among students is shaped by pedagogical design, contextual relevance, and the learning experiences provided (Adhimursandi, 2016)(Widya et al., 2025; Rachmawati et al., 2024). Longitudinal research shows that entrepreneurship education can enhance entrepreneurial knowledge and attitudes, although more stable behavioral transformation tends to emerge when students engage in project-based and context-specific activities linked directly to their own environments (Thomassen et al., 2020; Lotulung et al., 2018; Octaviany et al., 2024; Rahmawati & Aulia, 2025). Experimental studies further highlight that interventions grounded in real problem-solving and exposure to local entrepreneurial practices strengthen creativity, risk-taking, and opportunity recognition (Gurău & Dana, 2018; Korsching & Allen, 2004). These findings underscore the urgent need for entrepreneurial learning programs that are practical and contextually embedded.

Developing entrepreneurial behavior requires interventions that extend beyond cognitive and affective dimensions and are firmly rooted in the learners' sociocultural context. Approaches that integrate cultural sensitivity have been shown to enhance learning relevance and strengthen students' intrinsic motivation (Lindh & Thorgren, 2016; Jardim et al., 2021; Solesvik et al., 2014; Farny et al., 2019). Social Cognitive Theory (Ewen B & Ewen, 2014) provides a strong theoretical foundation through the mechanism of symbolic modeling, in which learning occurs through observation of role models. Research indicates that the effectiveness of modeling is influenced by the model's authenticity and the degree of closeness to the learners (Boldureanu et al., 2020); (Adesola et al., 2019). Hence, culturally aligned role models and narratives constitute essential components in shaping students' entrepreneurial behavior.

Symbolic Modeling delivered through narratives, videos, or case studies has been shown to enhance self-efficacy, career motivation, and entrepreneurial interest, particularly when learners perceive the role models as relatable and authentic (Wahrini et al., 2024). Experimental evidence also confirms that exposure to role models who face real challenges and articulate their strategies for overcoming them can significantly improve entrepreneurial self-efficacy (Laviolette et al., 201); Patel & Rietveld, 2020; Chereau & Meschi, 2022). Additional studies show that identity proximity, including shared social background, language, values, and life experiences, acts as an important moderator of modeling effectiveness(Celuch & Winkel, 2017; Feder & Nițu-Antonie,

2017). These findings align with Social Cognitive Theory, which asserts that observational learning becomes more powerful when learners can identify themselves with the models they observe.

However, despite extensive research on Symbolic Modeling and growing consensus on the importance of contextual relevance, there is still no entrepreneurship intervention that systematically embeds a concrete local wisdom framework into its learning structure. Existing approaches often remain generic and overlook how cultural norms and collective identity fundamentally shape students' motivation, risk orientation, and perceptions of viable business opportunities (Tripopsakul, 2025; Chimezie, 2024; Strauß et al., 2020; Kreiser et al., 2010). The absence of such cultural integration constitutes a critical research gap, especially in regions where entrepreneurial behavior is deeply influenced by community values and local economic practices, such as the Bangka Belitung context. Incorporating a specific local philosophy, such as DEM NGULON, into Symbolic Modeling is therefore needed to ensure that observed role models, narratives, and behavioral reinforcement align closely with students' lived experiences and identity development, thereby accelerating more meaningful and sustainable entrepreneurial behavioral change.

In the Bangka Belitung context, the local wisdom framework known as the Dialog Equation Model *(*DEM NGULON*)* offers culturally embedded values that can enrich modeling-based learning. This philosophy emphasizes deep environmental awareness, creative use of resources, and prudent decision-making, values consistent with sustainable entrepreneurship (Volkmann et al., 2010);(Alum & Drucker, 1986). Previous studies further suggest that the internalization of cultural values can strengthen entrepreneurial identity and enhance students' adaptability in developing business ideas (Donellon, Mei, and Kuberrod). Therefore, integrating DEM NGULON with Symbolic Modeling provides a novel approach that combines psychological mechanisms with culturally grounded value formation. The DEM NGULON–Based Symbolic Modeling approach introduced in this study is designed to examine its influence on the development of five key aspects of students' entrepreneurial behavior.

Based on this gap, the present study focuses on developing and testing the DEM NGULON–based Symbolic Modeling technique to improve five key aspects of entrepreneurial behavior among high school students. The research problem addressed in this study concerns the effectiveness of DEM NGULON integration within Symbolic Modeling in fostering entrepreneurial behavioral change in senior high school students.

METHOD

This study employed the Collaborative Action Research (CAR) method as the main framework for designing, implementing, and reflecting on the process of developing entrepreneurial behavior among senior high school students in Bangka Regency through group guidance using the Symbolic Modeling technique based on the Dialog Equation Model (DEM NGULON). CAR emphasizes collaboration, critical reflection, orientation toward change, and contextualization. The implementation of CAR is illustrated in Figure 1.

Figure 1. Overview of the CAR process

In general, the CAR process in this study followed four main cycles that represent an ongoing learning process between researchers and practitioners. Each cycle consists of five core steps (Table 1).

Table 1.
CAR Cycle Stages

CAR Cycle Stages	Description of Main Activities	Expected Output
Cycle I	Initial identification of the problems and the first implementation of the *DEM NGULON* Symbolic Modeling technique	Mapping of the problems and initial effectiveness of the intervention model
Cycle II	Method adjustment based on reflections from Cycle I, and implementation of a more structured group guidance process	Increased student participation and changes in entrepreneurial behavior
Cycle III	Further revision and refinement of the model; assessment of the final intervention outcomes	A final DEM NGULON Symbolic Modeling–based guidance model that is valid and effective
Cycle IV	Implementation of the model by guidance and counseling (GC) teachers	A final DEM NGULON Symbolic Modeling–based guidance model that can be applied by GC teachers

The final product of this development stage is the DEM NGULON–Based Symbolic Modeling Group Guidance Model, whose characteristics are presented in Table 2.

Table 2.
Model Development Output

Aspect	Description
Model Name	*DEM NGULON* Symbolic Modeling Group Guidance
General Purpose	To develop entrepreneurial behavior among senior high school students through symbolic, reflective, and collaborative processes
Theoretical Foundation	Social Learning Theory (Bandura), Reflective Dialogue Model (Hambali), and the Developmental Guidance Approach
Core Principles	Collaborative, Reflective, Contextual, and Cultural
Main Stages	Case Narration – Case Exploration – Norm Sequencing – Awareness Literacy – Objectification – Value Reinforcement
Main Media	Symbolic stories, inspirational videos, group discussions, and value reflection

The research participants included eleventh-grade students, guidance and counseling teachers, and school administrators from four senior high schools in Bangka Regency, namely State Senior High School 1 Merawang, State Senior High School 1 Pemali, State Senior High School 2 Sungailiat, and Private Senior High School Setia Budi. The main participants (students) were selected using purposive sampling. 139 students from different schools were selected to ensure a representative sample, based on criteria such as interest in entrepreneurship and involvement in school-based entrepreneurial activities.

Data were collected using a mixed-methods approach to obtain a comprehensive understanding of the intervention's effectiveness. The data collection techniques consisted of participatory observation, in-depth interviews, and questionnaires. The questionnaire was adapted from instruments designed to measure entrepreneurial behavior and had undergone validity and reliability testing. The collected data comprised both quantitative and qualitative data. Quantitative data obtained from the questionnaire were analyzed using descriptive and inferential statistics (paired-sample t-test). Qualitative data derived from observations and interviews were analyzed thematically.

RESULTS AND DISCUSSION

Results

The Implementation of The DEM NGULON Symbolic Modeling

The implementation of the DEM NGULON Symbolic Modeling approach was designed to align with the reflective, participatory, and adaptive principles of Collaborative Action Research. This model integrates the six NGULON stages, *Narasi Kasus* (Case Narrative), *Gali Kasus* (Case Exploration), *Urutkan Norma* (Norm Sequencing), *Literasi Kesadaran* (Awareness Literacy), *Objektifkan Diri* (Self-Objectification), and *Nilai Dikuatkan* (Value Reinforcement), into a structured group guidance process led by guidance and counseling teachers. The Narasi Kasus stage serves as the entry point by presenting locally relevant stories, videos, or role models that highlight entrepreneurial behavior and stimulate students' attentional processes as described in Social Cognitive Theory. The Gali Kasus stage engages students in guided

discussions to identify entrepreneurial values embedded in the narrative, fostering analytical thinking and moral awareness.

During *Urutkan Norma*, students transform the values they have identified into actionable behavioral norms, shifting the learning process from cognitive understanding toward affective and conative internalization. The *Literasi Kesadaran* and *Objektifkan Diri* stages deepen reflection. Students write personal reflective journals connecting symbolic values to their lived experiences, while guidance teachers facilitate reflective dialogue using the Dialog Equation Model (DEM). This process aligns with transformative learning principles, enabling perspective and behavioral change through critical reflection. Finally, *Nilai Dikuatkan* focuses on strengthening positive behaviors. Teachers provide verbal and symbolic reinforcement, such as awarding an "NGULON Inspiration Card", to acknowledge students' progress. This reinforcement supports the sustainability of behavioral change, consistent with social learning and behavioral reinforcement theory.

The implementation of DEM NGULON Symbolic Modeling was carried out through collaborative work involving researchers, guidance and counseling teachers, and students. The researcher designed the intervention, supported the implementation, and facilitated reflection at the end of each cycle. Guidance counselors served as primary practitioners, leading group activities, guiding reflective discussions, and connecting entrepreneurial values to local cultural contexts. Students acted as both the central focus and active partners, participating in symbolic observation, reflective dialogue, and the creation of personal action plans. This triadic collaboration reflects the principles of action research and student-centered learning, enabling deeper and more meaningful internalization of entrepreneurial behavior.

The effectiveness of implementing DEM NGULON Symbolic Modeling was shaped by several contextual factors that emerged during the action research process. Supporting factors included the relevance of local cultural symbols, strong reflective collaboration between researchers and guidance counselors, and students' intrinsic motivation. Inhibiting factors involved limited implementation time, differences in students' reflective abilities, and teachers' initial adjustment to the reflective approach. These obstacles diminished across subsequent cycles as strategies were refined, and symbolic materials and reflection activities were adjusted. By the third and fourth cycles, the intervention showed significantly improved effectiveness, marked by deeper student engagement and more consistent changes in entrepreneurial behavior.

This study was conducted over four cycles to observe the gradual development of students' entrepreneurial behavior through the application of the DEM NGULON Symbolic Modeling technique. Cycle I introduced core entrepreneurial values and exposed students to symbolic figures through narratives, visuals, and guided discussions. Cycle II reinforced the initial responses, Cycle III examined the stability and continuity of behavioral change, and Cycle IV served as an affirmation stage to ensure that the improvements were consistent and sustained.

Each cycle concluded with evaluation and reflection, which informed the refinement of subsequent implementation. Data collected after every cycle were analyzed using descriptive statistics and paired-sample t-tests to determine significant changes across the five behavioral aspects. The use of parametric tests was considered appropriate given the large sample size, which allowed the distribution of score differences to be

treated as approximately normal. Homogeneity tests were unnecessary because paired-sample analysis compares differences within the same participants. Taken together, the four cycles provided a progressive, structured framework for assessing the effectiveness of the DEM NGULON Symbolic Modeling technique in fostering innovativeness, risk-taking, hard work, managerial ability, and decision-making among students.

The Measurement of Entrepreneurial Behavior on Four Cycles

Entrepreneurial behavior was measured across five aspects: innovativeness, risk-taking, hard work, managerial ability, and decision-making. Each aspect comprises several sub-aspects, as shown in Table 3.

Table 3.
Sub-Aspects of the Five Measured Aspects

Aspect	**Sub-Aspect**
Innovativeness	New Ideas, Innovative Solutions, Added Value
Risk-Taking	Risk Decisions, Loss Assessment, Risk Opportunities
Hard Work	Commitment, Focus, Dedication
Managerial Ability	Managing Human Resources, Strategy, Priorities
Decision-Making	Accurate Decisions, Solutions, Benefits

The initial measurements conducted prior to Cycle I show that students scored highest in Innovativeness (K) with an average of 3.79 and a relatively small standard deviation, indicating consistent responses. This was followed by Hard Work (HW) and Managerial Ability (MA), both with average scores around 3.71. Decision-Making (DM) also displayed a similar mean score of 3.71 with low variability across respondents. In contrast, Risk-Taking (RT) recorded the lowest average score at 3.59, though its variation remained moderate. Overall, the results suggest that students demonstrate stronger abilities in innovation, hard work, managerial skills, and decision-making, while risk-taking appears to be the weakest aspect among the five measured dimensions. The mean and standard deviation for the five aspects were obtained, as presented in Figure 2.

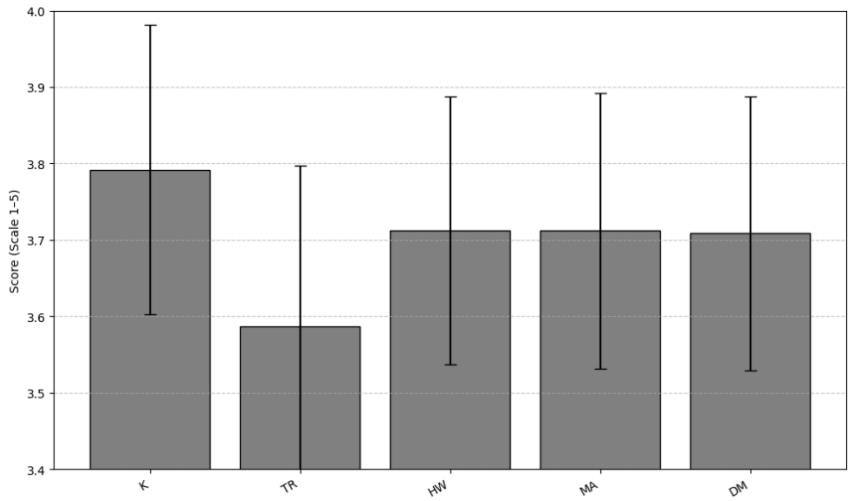

Figure 2. The Descriptive Statistics of the Measurement before Cycle 1.

The data in Cycle I follow the distribution shown in the Q–Q plots (Figures 3). Across all five Q–Q plots, the data points align closely with the diagonal line, indicating that the distributions of the five aspects are approximately normal.

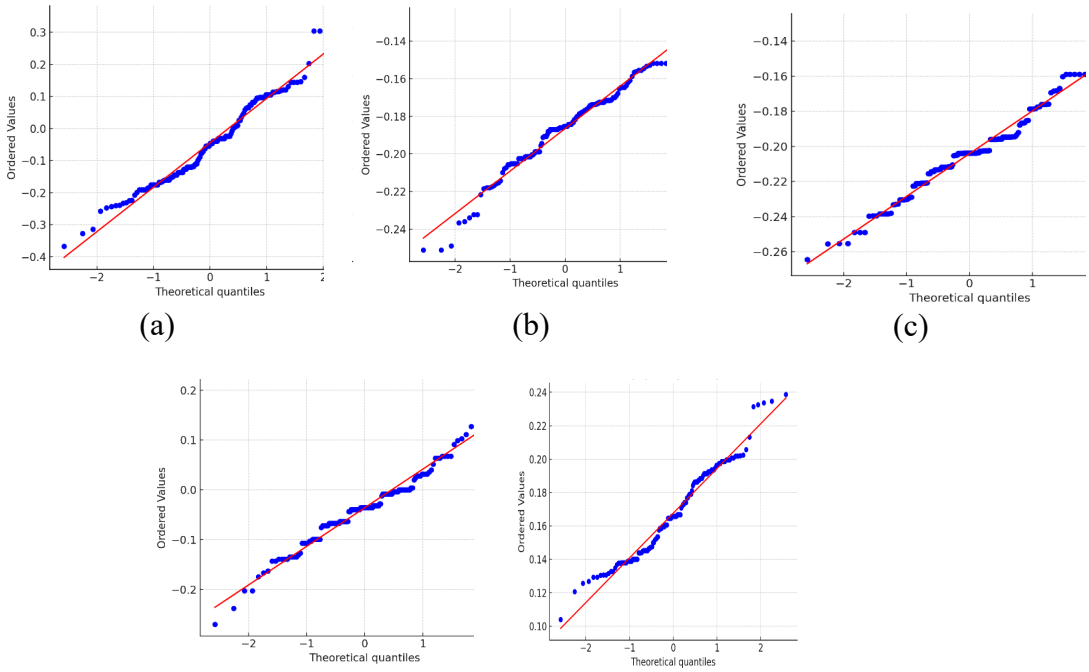

Figure 3. Q-Q Plot of the Initial Data before Cycle 1 (a) K (b) TR (c) HW (d) MA (e) DM

A comparison of the baseline measurements and Cycle 1 results for the five aspects of entrepreneurial behavior is presented in Figure 4. The figure displays the mean scores before and after the first intervention cycle using a dual-bar chart, illustrating changes across all aspects. To support these visual findings, paired-sample t-tests were conducted for each aspect, and the resulting two-tailed p-values are summarized in Table 4.

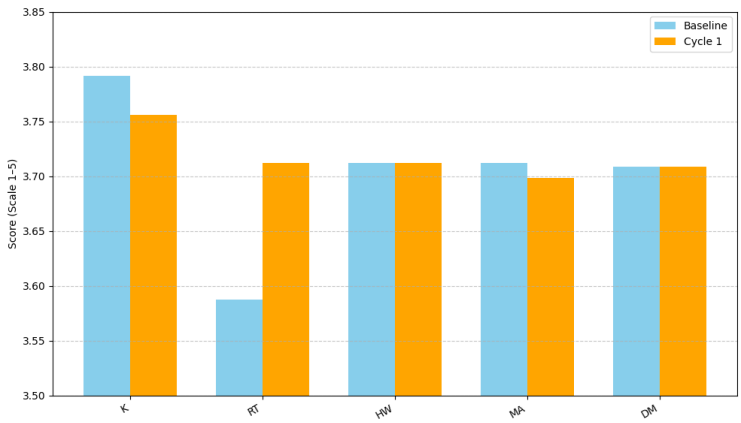

Figure 4. A Comparison of the Baseline Measurements and Cycle 1

Table 4.
The Significance of Fifth Aspects on Cycle 1

Entrepreneurial Behavior Aspect	p-value (Two-tailed)	Significance Interpretation (α = 5%)
Innovation	$2.1901\ x\ 10^{-7}$	Not significant
Risk Taking	$1.75\ x\ 10^{-15}$	Significant
Hard Work	0.8276	Not significant
Managerial Ability	$1.86\ x\ 10^{-20}$	Significant
Decision Making	0.2905	Not significant

The paired sample t-test results for Cycle 1 show varying levels of significance across the five aspects of entrepreneurial behavior. Innovativeness, risk-taking, and managerial ability demonstrated highly significant improvements, with p-values far below the 5 percent threshold. These results indicate that the intervention produced measurable changes in these three aspects after the first cycle. In contrast, the hard work and decision-making aspects did not show significant differences, as reflected by their p-values of 0.8276 and 0.2905. This suggests that, at Cycle 1, the Symbolic Modeling technique had not yet produced meaningful changes in these two behavioral domains. Overall, the findings imply that some aspects were more responsive to the initial intervention than others, setting the stage for deeper reinforcement in subsequent cycles.

The same pattern was observed in the data from Cycles 2 through 4. Overall, the results indicate that the data were approximately normally distributed. The measurement of whether the DEM NGULON Symbolic Modeling technique produced an effect between baseline and the combination of 4 cycles is presented in Table 5.

Table 5.
Significance of the Comparison of the Five Aspects Before and After the Four Cycles

Entrepreneurial Behavior Aspect	p-value (Two-tailed)	Significance Interpretation (α = 5%)
Innovation	0.076	Not significant
Risk Taking	0.0016	Significant
Hard Work	0.8765	Not significant
Managerial Ability	0.0046	Significant
Decision Making	0.2791	Not significant

Across Cycles 2, 3, and 4, the analysis consistently showed that none of the five aspects of entrepreneurial behavior reached statistical significance. In Cycle 2, both innovativeness and risk-taking produced p-values above the 5 percent threshold, indicating that the early reinforcement phase had not yet generated measurable changes. This trend continued in Cycle 3, where all aspects, innovativeness, risk-taking, hard work, managerial ability, and decision-making, remained non-significant, suggesting that although students may have begun to develop more stable patterns of behavior, these changes were not strong enough to be detected statistically. By Cycle 4, the results were similar, with all aspects again showing non-significant p-values. This pattern indicates that the later cycles supported continuity and consolidation of behavior rather than sharp quantitative shifts. Overall, the findings imply that while qualitative improvements may

have occurred throughout the intervention, the statistical effects after Cycle 1 did not show further significant increases across subsequent cycles.

The Measurement Among Schools

Figure 5 compares the mean scores for the five entrepreneurial behavior aspects across four schools before the implementation of the DEM NGULON Symbolic Modeling technique. Overall, all schools show relatively high and consistent values across the measured aspects, although slight differences highlight unique characteristics within each school. Private Senior High School Setia Budi stands out with the most stable and highest scores, consistently above 3.7 across all indicators. Its strong performance in Innovativeness, Managerial Ability, and Decision-Making suggests a school environment that supports student independence, creativity, and responsibility, possibly reflecting a more established guidance culture.

In contrast, State Senior High School 2 Sungailiat records the lowest values across most aspects. Lower scores in Hard Work and Managerial Ability indicate a greater need for strengthened entrepreneurial character development. This pattern may reflect internal factors, such as less empowering guidance practices, or external factors, such as limited environmental stimulation for creativity and risk-taking. State Senior High School 1 Merawang and State Senior High School 1 Pemali occupy middle positions, with scores slightly below Private Senior High School Setia Budi but generally stable. While both schools show good performance in Hard Work and Managerial Ability, lower values in Risk-Taking and Decision-Making suggest areas where entrepreneurial character development can still be enhanced. Even though numerical differences between schools appear small, they reflect distinct guidance atmospheres: Private Senior High School Setia Budi consistently shows strong baseline performance, whereas State Senior High School 2 Sungailiat shows considerable potential for improvement.

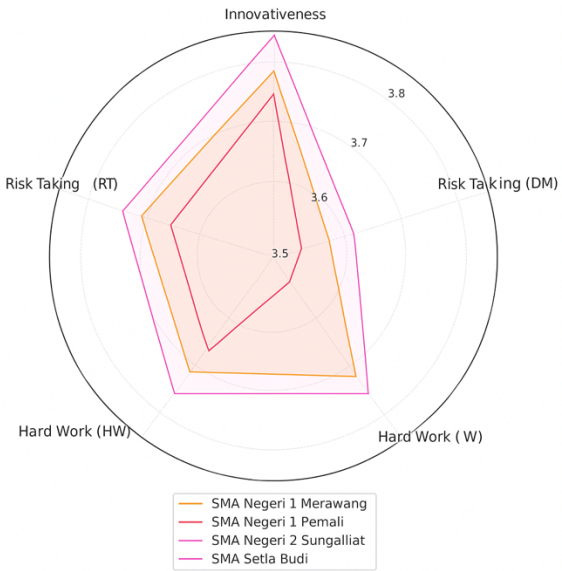

Figure 5. Comparison of the Entrepreneurial Profiles of Four Schools Before the Implementation of the DEM NGULON Symbolic Modeling

Figure 6 presents the post-intervention entrepreneurial profiles. State Senior High School 2 Sungailiat shows the most notable improvement, with increased scores across all aspects, particularly in Innovativeness, Managerial Ability, and Hard Work. The sharp rise in Hard Work, previously the school's weakest area, indicates that the Symbolic Modeling approach effectively enhanced students' work ethic and confidence. State Senior High School 1 Merawang shows mixed results. While Risk-Taking and Hard Work improved significantly, Innovativeness declined slightly, and Decision-Making weakened. This suggests that the intervention more strongly influenced action-oriented behaviors than exploratory or creative dimensions.

State Senior High School 1 Pemali demonstrates modest improvements across most aspects, especially in Hard Work and Managerial Ability, though Innovativeness decreased slightly. This may indicate that the intervention encouraged structure and perseverance more than idea generation. Interestingly, Private Senior High School Setia Budi, initially the strongest performer, did not show notable improvement. Several aspects even declined slightly, including Innovativeness and Risk-Taking. This pattern suggests that schools with already strong baselines may experience less visible impact from the intervention, whereas schools with lower initial scores, such as State Senior High School 2 Sungailiat, benefit more substantially.

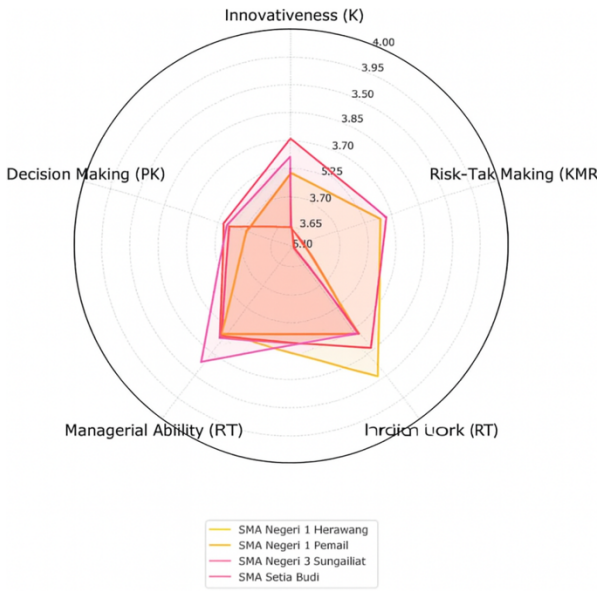

Figure 6. Comparison of the Entrepreneurial Profiles of Four Schools After the Implementation of the DEM NGULON Symbolic Modeling

The significance of these changes was further examined using independent sample t-tests. The following table presents the statistical outcomes of the DEM NGULON Symbolic Modeling intervention across the five entrepreneurial aspects in all four schools. The findings of this study show that the DEM NGULON Symbolic Modeling technique contributed meaningfully to the development of students' entrepreneurial behavior. However, its effects unfolded differently across behavioral aspects, cycles, and school contexts. The intervention, grounded in reflective, participatory, and culturally contextualized principles, integrated six DEM NGULON stages that guided students from

symbolic exposure to deeper self-reflection and behavioral reinforcement. These stages helped students anchor entrepreneurial values in familiar cultural narratives, analyze the meaning behind symbolic representations, structure these meanings into personal norms, and internalize them through reflective writing and dialogue. The collaborative involvement of researchers, guidance counselors, and students strengthened the process by ensuring a continuous cycle of adaptation, reflection, and reinforcement within each action research cycle.

The quantitative results show that the most notable improvements occurred during Cycle 1, particularly in innovativeness, risk-taking, and managerial ability, indicating that the Symbolic Modeling approach was highly effective as an initial catalyst. The absence of significant changes in hard work and decision-making during the same cycle suggests that certain aspects require longer-term or more targeted intervention to manifest measurable change. Across Cycles 2 to 4, the statistical tests consistently indicated non-significant results, yet the stability observed in the descriptive data suggests a phase of consolidation rather than stagnation; behavioral changes appeared to become more consistent and internalized rather than producing sharp statistical shifts. Contextual factors also played an important role in shaping outcomes. The use of local cultural symbols, strong reflective collaboration, and students' intrinsic motivation served as supporting factors, while limited time, varied reflective abilities, and counselors' initial adaptation to the new approach posed early barriers that diminished over time as strategies improved.

Differences across schools further highlight how context shapes the intervention's impact. Private Senior High School Setia Budi, with its strong baseline, showed minimal change, likely due to a ceiling effect. In contrast, State Senior High School 2 Sungailiat, which initially recorded the lowest scores, exhibited the most substantial growth in all five aspects. Schools with moderate initial profiles, such as State Senior High School 1 Merawang and State Senior High School 1 Pemali, showed mixed patterns, with improvements in action-oriented behaviors but slight declines in innovativeness, suggesting that the technique may have strengthened perseverance and structure more than creativity in these contexts. Taken together, these findings suggest that DEM NGULON Symbolic Modeling is most impactful in environments where entrepreneurial competencies are still developing and that its strength lies in initiating early change and supporting gradual internalization over time. The combination of cultural grounding, reflective learning, and collaborative action research created a framework that fostered meaningful behavioral development even when quantitative measures did not always capture ongoing qualitative growth.

Discussion

DEM NGULON, as a philosophical construct rooted in local wisdom, offers a unique perspective in developing entrepreneurial behavior. This concept, which symbolically represents the process of learning from past experiences to shape the future, aligns fundamentally with the theory of symbolic modeling (Überbacher et al., 2015). In their study on how entrepreneurs become skilled cultural operators, Überbacher et al. (2015) explain that entrepreneurial success is largely determined by an individual's capacity to engage in adaptive sensemaking an adaptive process of interpreting and utilizing cultural resources to legitimize their ventures. DEM NGULON, in this context,

functions as a cultural resource rich in symbols and narratives of local wisdom. This group guidance intervention, based on DEM NGULON, invites participants not merely to learn conventional entrepreneurship theories, but to become cultural operators capable of exploring, interpreting, and transforming noble cultural values such as perseverance, wisdom, and mutual cooperation into symbolic capital for building contextual and sustainable entrepreneurial ventures.

The effectiveness of the DEM NGULON intervention depends heavily on the group guidance format, which serves as the primary vehicle for learning. The conceptual model of entrepreneurial leadership development in teams emphasizes that peer observation and experiential learning within group settings are crucial factors in the accumulation of entrepreneurial knowledge and skills (Ahmed & Harrison, 2025). DEM NGULON-based group guidance adopts this principle by creating a dialogical space where participants collectively engage in adaptive sensemaking of the symbolic values embedded in the DEM NGULON philosophy. This collaborative process enables the exchange of interpretations, joint reflection, and the construction of new meanings regarding how local wisdom can be applied in contemporary business contexts. Group dynamics not only enrich individual understanding but also build social capital that serves as a foundation for developing future business networks.

The presence of role models is a vital component of the *DEM NGULON* intervention, particularly in building participants' entrepreneurial intention and self-efficacy. Research on women's entrepreneurial intention in Taiwan demonstrates that the presence of relevant role models significantly influences attitudes, subjective norms, and entrepreneurial passion, thereby shaping entrepreneurial intentions (Trinh et al., 2025). What distinguishes the DEM NGULON intervention is the expansion of the role model concept to encompass not only successful contemporary entrepreneurs but also historical or legendary figures embedded in local culture. This aligns with the concept of entrepreneurial bricolage, wherein entrepreneurs assemble various available resources—including social and interpersonal capital—to overcome limitations and create opportunities (Zhao et al., 2023). Participants in the guidance program are encouraged to engage in symbolic bricolage by assembling heroic values from the past and integrating them with contemporary social networks and resources, thereby building self-confidence that they can become entrepreneurs who are not only economically successful but also culturally meaningful.

To bridge the gap between conceptual understanding and practical readiness, the DEM NGULON intervention adopts a dynamic simulation approach that allows participants to experiment with various entrepreneurial scenarios in a safe environment. A bibliometric method has been introduced to design agent-based simulation models that can represent the complexity of entrepreneurial processes, including learning dynamics and decision-making (Shim et al., 2017). The entrepreneurial phase cycle model can be utilized to understand and predict entrepreneurial behavior (Smirnov et al., 2019). Agent-based simulation can be employed in teaching innovation diffusion in technology startups (Ilagan & Ilagan, 2023). In the context of DEM NGULON, this dynamic simulation is designed to incorporate cultural variables as key parameters. Participants can visualize how decisions based on DEM NGULON values affect their business development, their responses to market dynamics, and their efforts to build cultural legitimacy among

stakeholders. Simulation becomes a behavioral experimentation laboratory that prepares participants to face real-world uncertainties.

By integrating these four theoretical pillars, DEM NGULON–Based Symbolic Modeling can be formulated as a comprehensive and innovative group guidance intervention model. This model operates through several stages: first, the internalization of DEM NGULON's symbolic values through cultural adaptive sensemaking; second, the reinforcement of meaning through group dynamics and peer observation; third, the formation of intention and self-efficacy through exposure to dual role models (historical and contemporary) as well as resource bricolage practices; and fourth, the testing of understanding through dynamic simulation of entrepreneurial processes. The projected impacts of this intervention encompass three levels: at the individual level, participants develop strong cultural competence and self-efficacy; at the group level, social networks and collective capital supporting business collaboration are established; and at the community level, this intervention contributes to the revitalization of local wisdom as a contextual and sustainable economic force. DEM NGULON, therefore, is not merely a remembered heritage from the past but truly becomes a dream and a guide for building an entrepreneurial future rooted in one's own cultural identity.

ACKNOWLEDGMENTS

Declare none

CONCLUSION

This study shows that the DEM NGULON Symbolic Modeling technique is a culturally grounded and effective approach for developing entrepreneurial behavior among high school students. By combining six structured stages with collaborative guidance practices, the intervention helped students connect symbolic narratives to personal experiences, translate values into behavioral norms, and reinforce these changes through reflection and feedback. The strongest measurable improvements appeared in Cycle 1, particularly in innovativeness, risk-taking, and managerial ability, indicating the technique’s effectiveness as an initial trigger for behavioral change. Although subsequent cycles did not produce additional statistical gains, the stability of the scores suggests that later phases supported consolidation and internalization rather than rapid shifts. Differences across schools highlight the intervention's contextual nature. Schools with lower initial scores showed the most substantial improvement, while schools with stronger baselines experienced minimal change, reflecting a likely ceiling effect. These variations suggest that Symbolic Modeling is especially beneficial in settings where entrepreneurial competencies are still emerging. The collaborative involvement of researchers, counselors, and students played a crucial role in sustaining engagement and ensuring contextual relevance. Supporting factors such as cultural alignment and student motivation enhanced the process, while early challenges gradually diminished as the cycles progressed.

RFERENCES

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. Small Business Economics 2013 41:4, 41(4), 757–774. Https://doi.org/10.1007/S11187-013-9505-9

Adesola, S., den Outer, B., & Mueller, S. (2019). New entrepreneurial worldscan the use of role models in higher education inspire students? The case of Nigeria. Journal of Entrepreneurship in Emerging Economies, 11(4), 465–491. Https://doi.org/10.1108/JEEE-08-2018-0076

Adhimursandi, D. (Doddy). (2016). Faktor-faktor Yang Mempengaruhi Niat Kewirausahaan. Kinerja: Jurnal Ekonomi Dan Manajemen, 13(2), 193–210. Https://doi.org/10.29264/JKIN.V13I2.63

Ahmed, F., & Harrison, C. (2025). Entrepreneurial leadership development in teams: A conceptual model. *International Journal of Entrepreneurship and Innovation*, 26(1), 45-58. DOI: 10.1177/14657503221143876

Alum, R. A., & Drucker, P. F. (1986). Innovation and Entrepreneurship: Practice and Principles. Public Productivity Review, 10(1), 105. Https://doi.org/10.2307/3380320

Amalia, R. B. (2016). Implementasi pembelajaran kewirausahaan melalui praktek prakarya di SMK PGRI 3 Malang.

Arranz, N., Arroyabe, M. F., & Fdez. De Arroyabe, J. C. (2019). Entrepreneurial intention and obstacles of undergraduate students: the case of the universities of Andalusia. Studies in Higher Education, 44(11), 2011–2024. Https://doi.org/10.1080/03075079.2018.1486812;JOURNAL:JOURNAL:CSHE20;REQUESTEDJOURNAL:JOURNAL:CSHE20;WGROUP:STRING:PUBLICATION

Audretsch, D. B., & Keilbach, M. (2004). Entrepreneurship and regional growth: An evolutionary interpretation. Journal of Evolutionary Economics, 14(5), 605–616. Https://doi.org/10.1007/S00191-004-0228-6/METRICS.

Boldureanu, G., Ionescu, A. M., Bercu, A. M., Bedrule-Grigoruţă, M. V., & Boldureanu, D. (2020). Entrepreneurship Education through Successful Entrepreneurial Models in Higher Education Institutions. Sustainability 2020, Vol. 12, Page 1267, 12(3), 1267. Https://doi.org/10.3390/SU12031267

Celuch, K., & Winkel, D. (2017). ENTREPRENEURIAL IDENTITY: THE MISSING LINK FOR ENTREPRENEURSHIP EDUCATION. Journal of Entrepreneurship Education, 20(2).

Chereau, P., & Meschi, P. X. (2022). Deliberate practice of entrepreneurial learning and self-efficacy: the moderating effect of entrepreneurial parental environment as role modeling. Journal of Small Business and Enterprise Development, 29(3), 461–483. Https://doi.org/10.1108/JSBED-07-2021-0277

Chimezie, B. (2024). THE ROLE OF SOCIAL IDENTITY IN YOUTH ENTREPRENEURSHIP: A SOCIAL PSYCHOLOGICAL PERSPECTIVE. International Journal of Youth Empowerment and Entrepreneurship Development, 6. Https://doi.org/10.13140/ijyeed.12.2024.833.847

Ewen B, R., & Ewen, R. B. (2014). Social-Cognitive Theory. An Introduction to Theories of Personality, 341–360. Https://doi.org/10.4324/9781315793177-21

Farny, S., Frederiksen, S. H., Hannibal, M., & Jones, S. (2019). A culture of entrepreneurship education. Institutionalization of Entrepreneurship Research, 38–59. Https://doi.org/10.4324/9781351270762-3

Feder, E. S., & Niţu-Antonie, R. D. (2017). Connecting gender identity, entrepreneurial training, role models and intentions. International Journal of Gender and

Entrepreneurship, 9(1), 87–108. Https://doi.org/10.1108/IJGE-08-2016-0028

Gurău, C., & Dana, L. P. (2018). Environmentally-driven community entrepreneurship: Mapping the link between natural environment, local community and entrepreneurship. Technological Forecasting and Social Change, 129, 221–231. Https://doi.org/10.1016/J.TECHFORE.2017.11.023

Ilagan, J. B., & Ilagan, J. R. (2023). Teaching diffusion of innovations involving technology startups using agent-based simulation modeling: Architecture and design considerations. *Lecture Notes in Computer Science*, 13916, 312-328. DOI: 10.1007/978-3-031-35927-9_24

Iskandar, I., S. M. (2018). Perilaku Kewirausahaan Mahasiswa : Faktor-Faktor yang Mempengaruhi dan Hambatan yang dialami Mahasiswa Pewirausaha. Jurnal Ilmu Manajemen Dan Bisnis, 9(1), 45–52. Https://doi.org/10.17509/JIMB.V9I1.19748

Jardim, J., Bártolo, A., & Pinho, A. (2021). Towards a Global Entrepreneurial Culture: A Systematic Review of the Effectiveness of Entrepreneurship Education Programs. Education Sciences 2021, Vol. 11, Page 398, 11(8), 398. Https://doi.org/10.3390/EDUCSCI11080398

Korsching, P. F., & Allen, J. C. (2004). Locality based entrepreneurship: A strategy for community economic vitality. Community Development Journal, 39(4), 385–400. Https://doi.org/10.1093/CDJ/BSH034

Kreiser, P. M., Marino, L. D., Dickson, P., & Weaver, K. M. (2010). Cultural influences on entrepreneurial orientation: The impact of national culture on risk taking and proactiveness in smes. Entrepreneurship: Theory and Practice, 34(5), 959–983. Https://doi.org/10.1111/J.1540-6520.2010.00396.X;SUBPAGE:string:abstract;journal:journal:etpb;website:website:sage;wgroup:string:publication

Laviolette, E. M., Lefebvre, M. R., & Brunel, O. (2012). The impact of story bound entrepreneurial role models on self-efficacy and entrepreneurial intention. International Journal of Entrepreneurial Behavior & Research, 18(6), 720–742. Https://doi.org/10.1108/13552551211268148

Lindh, I., & Thorgren, S. (2016). Entrepreneurship education: the role of local business. Entrepreneurship and Regional Development, 28(5–6), 313–336. Https://doi.org/10.1080/08985626.2015.1134678;PAGE:STRING:ARTICLE/CHAPTER

Lotulung, C. F., Ibrahim, N., & Tumurang, H. (2018). Effectiveness of Learning Method Contextual Teaching Learning (CTL) for Increasing Learning Outcomes of Entrepreneurship Education. Turkish Online Journal of Educational Technology - TOJET, 17(3), 37–46.

Mudji Hartati, M. H. (2023). Penanaman nilai-nilai Islami pada Pendidikan Kewirausahaan untuk membentuk sikap kemandirian peserta didik : Penelitian di SMAN 3, SMAN 20 dan SMAN 24 Kota Bandung.

Octaviany, F., Ruhiyat, Y., & Atikah, C. (2024). Pengaruh pendidikan kewirausahaan berbbasis proyek terhadap minat berwirausaha siswa kelas xii pada materi perencanaan usaha pengolahan makanan fungsional. Pendas : Jurnal Ilmiah Pendidikan Dasar, 9(03), 266–274. Https://doi.org/10.23969/JP.V9I03.17630

Patel, P. C., & Rietveld, C. A. (2020). The impact of financial insecurity on the self-employed's short-term psychological distress: Evidence from the COVID-19

pandemic. Journal of Business Venturing Insights, 14(August), e00206. Https://doi.org/10.1016/j.jbvi.2020.e00206

Rachmawati, R., Wahyuningsih, S. E., Kusumastuti, A., & Kriswanto, H. D. (2024). EFEKTIVITAS MODEL PEMBELAJARAN PENDIDIKAN KEWIRAUSAHAAN BERBASIS PENGALAMAN DAN MINAT BERBISNIS MAHASISWA. Bookchapter Pendidikan Universitas Negeri Semarang, 8, 41–70. Https://doi.org/10.1529/KP.V1I8.192

Rahmawati, N., & Aulia, S. K. (2025). Pengaruh Pembelajaran Berbasis Proyek Terhadap Kemampuan Kewirausahaan Siswa Kelas XII MAN 5 Jombang. Educational Note, 1(1), 8–14. Https://doi.org/10.70716/EDUNOTE.V1I1.4

Sandhu, M. S., Sidique, S. F., & Riaz, S. (2011). Entrepreneurship barriers and entrepreneurial inclination among Malaysian postgraduate students. International Journal of Entrepreneurial Behavior & Research, 17(4), 428–449. Https://doi.org/10.1108/13552551111139656

Shim, J., Bliemel, M., & Choi, M. (2017). Modeling complex entrepreneurial processes: A bibliometric method for designing agent-based simulation models. *International Journal of Entrepreneurial Behaviour & Research*, 23(6), 1052-1070. DOI: 10.1108/IJEBR-11-2016-0374

Smirnov, S., Iakovleva, T., Krylova, J., & Lupu, A. (2019). Designing of the entrepreneurial phase cycle simulation model: Justification and prospects. In 2019 5th International Conference on Information Management (ICIM) (pp. 187-191). IEEE. DOI: 10.1109/INFOMAN.2019.8714698

Solesvik, M., Westhead, P., & Matlay, H. (2014). Cultural factors and entrepreneurial intentionthe role of entrepreneurship education. Education + Training, 56(8–9), 680–696. Https://doi.org/10.1108/ET-07-2014-0075

Strauß, P., Greven, A., & Brettel, M. (2020). Determining the influence of national culture: insights into entrepreneurs' collective identity and effectuation. International Entrepreneurship and Management Journal 2020 17:2, 17(2), 981–1006. Https://doi.org/10.1007/S11365-020-00645-2

Suhartono. (2024). Strategi Pembelajaran Kewirausahaan : Membangun Kompetensi Melalui Kurikulum ... - Dr. Suharto, M.Kes - Google Buku. Https://books.google.co.id/books?Hl=id&lr=&id=txoseqaaqbaj&oi=fnd&pg=PA1&dq=Banyak+program+kewirausahaan+belum+benar-benar+mampu+menghubungkan+konsep+teoretis+dengan+realitas+sosial+budaya+peserta+didik,+sehingga+implementasinya+sering+dianggap+kurang+rel

Thomassen, M. L., Williams Middleton, K., Ramsgaard, M. B., Neergaard, H., & Warren, L. (2020). Conceptualizing context in entrepreneurship education: a literature review. International Journal of Entrepreneurial Behavior & Research, 26(5), 863–886. Https://doi.org/10.1108/IJEBR-04-2018-0258

Tripopsakul, S. (2025). Social Norms, Attitudes, Self-Efficacy, and Entrepreneurial Intentions: Moderating Roles of Education, Risk Tolerance, and Innovation Orientation. International Journal of Analysis and Applications, 23, 74–74. Https://doi.org/10.28924/2291-8639-23-2025-74

Trinh, H. T., Do, N. M., Nguyen, H. H., & Nguyen, V. H. A. (2025). Women's entrepreneurial intention in Taiwan: Unpacking the interplay of role models, knowledge, passion and cognitive antecedents. *Journal of Enterprising*

Communities: People and Places in the Global Economy, 19(2), 289-310. DOI: 10.1108/JEC-02-2024-0031

Überbacher, F., Jacobs, C. D., & Cornelissen, J. P. (2015). How entrepreneurs become skilled cultural operators. *Organization Studies*, 36(7), 925-951. DOI: 10.1177/0170840614561568

Volkmann, C. K., Tokarski, K. O., & Grünhagen, M. (2010). Basic Principles of Entrepreneurship. Entrepreneurship in a European Perspective, 1–66. Https://doi.org/10.1007/978-3-8349-8752-5_1

Wahrini, R., Nuridayanti, N., & Makmur, E. (2024). Application of Group Guidance Using Symbolic Modeling Techniques to Increase Self-Efficacy of Junior High School Students. Pinisi Journal of Art, Humanity, and Social Studies, 4(2), 208–220. Https://doi.org/10.55151/IJEEDU.V1I3.18

Widya, A., Citra, L., Desi, E., Kinanti, S., & Ayu, D. (2025). Kewirausahaan (konsep, strategi, dan praktik) dalam perspektif pendidikan ekonomi. Https://www.neliti.com/publications/618551/

Zhao, F.-Q., Chen, W.-D., Chen, Y., & Gao, Y.-C. (2023). Research on integrated mechanism of social interpersonal capitalization on entrepreneurship bricolage. *Studies in Science of Science*, 41(8), 1472-1482. DOI: 10.16183/j.cnki.xjkx.2023.08.007