

Developing Creativity and Entrepreneurial Skills of Automotive Vocational High School (SMK) Students through Airbrush Training

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Abstract

The growing automotive industry sector has also increased the need for human resources in this field. SMK PGRI 4 Serang City is one of the human resources providers of Motorcycle Automotive Engineering graduates. Painting is part of the motorcycle assembly industry that demands high competence from production operators. Indonesia's unpredictable weather also causes vehicle paint to fade quickly, so vehicle paint repairs need to be done through repainting. The airbrush technique that uses air pressure instead of a brush can speed up the painting process. At SMK PGRI 4 Serang City, training in painting with the airbrush technique has never been conducted. Therefore, the author provides airbrush training to improve students' creativity and entrepreneurial spirit. The training consists of theory and demonstrations accompanied by painting practice. This training is guided by two samurai education painting trainers from Samurai Paint Kirobushi. Evaluation results showed that 80–88% of participants achieved technical competency indicators, 85–87% demonstrated creativity-related competencies, and more than 80% showed entrepreneurial awareness. This ability has the potential to make students creative and innovative entrepreneurs.

Keywords: airbrush, creativity, entrepreneurship, painting, vocational school

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Introduction

The automotive industry in Indonesia has continued to grow significantly in recent years. This growth has not only increased industrial production activities but has also intensified the demand for human resources equipped with technical competencies that align with the needs of the industry (Handayani et al., 2024). One of the competencies required in the automotive field is vehicle painting skill, as the finishing process plays an important role in determining the visual quality, durability, and aesthetic value of automotive products (Hermianto & Utama, 2018).

Vocational High Schools (*Sekolah Menengah Kejuruan/SMK*) have a strategic role in preparing graduates who are ready to enter the workforce. As vocational education institutions, SMKs are expected to equip students with practical competencies that are relevant to industrial needs. However, in practice, there is often a gap between the competencies acquired in school and the skills required in the workplace (Hayyin & Rosdiana, 2024). This condition is especially visible in the field of vehicle painting, where modern automotive industries increasingly rely on spray-based and airbrush techniques to produce smoother, more precise, and more efficient painting results (Islahudin et al., 2020).

Airbrushing is a painting technique that uses compressed air to spray paint through a specialized tool, enabling a more controlled and even application than conventional manual methods. In the automotive sector, this technique is not only used for repainting vehicle surfaces but also widely applied in artistic and decorative work, such as helmet customization, motorcycle body graphics, and automotive accessories. Consequently, mastering airbrush techniques can provide students with both technical competence and opportunities to develop creativity and innovation in design.

Besides technical skills, fostering entrepreneurial spirit among vocational students is equally important. Vocational education should not only prepare students to seek employment but also encourage them to identify opportunities and create economic value from their competencies, as entrepreneurship education plays an important role in developing creativity, problem-solving ability, adaptability, and employability among learners (Rodrigues, 2023). In this regard, technical skills become more meaningful when they can be translated into practical business opportunities (Negara et al., 2024). The field of vehicle painting and customization,

especially airbrush-based work, has promising economic potential due to increasing public interest in personalized and aesthetically appealing vehicle designs (Fadholi et al., 2025).

SMK PGRI 4 Kota Serang is one of the vocational schools offering the Motorcycle Business Engineering (*Teknik dan Bisnis Sepeda Motor/TBSM*) program. This program is intended to equip students with knowledge and practical skills related to motorcycle maintenance, repair, and modification. However, based on initial observations by the community engagement team, painting practice at the school was still limited to conventional methods and had not specifically introduced students to airbrush techniques. As a result, students had not yet obtained direct exposure to a modern painting technique that is increasingly relevant in both industry and small-scale automotive businesses (Sengkey et al., 2025). Previous studies have shown that collaboration between educational institutions and industry partners can significantly improve students' practical competence and readiness for employment by bridging the gap between classroom learning and workplace requirements (Emmanuel et al., 2026).

Another relevant factor is Indonesia's tropical climate, which is characterized by high humidity and considerable rainfall. These environmental conditions can accelerate paint deterioration and increase the demand for repainting and refinishing services. In addition, the durability and quality of painting are strongly influenced by surface preparation and finishing processes, including the use of epoxy primer and proper drying methods (Putra et al., 2023). This indicates that painting skills, including airbrush techniques, are not only technically relevant but also economically valuable.

Based on these conditions, a training activity was considered necessary to improve students' technical competence while also developing their creativity and entrepreneurial orientation (Gozali et al., 2022). Airbrush training was selected as an appropriate intervention because it combines technical learning, visual creativity, and practical skill application. Through this activity, students were expected not only to understand the process of modern automotive painting but also to explore creative ideas that could potentially be developed into business opportunities (Marzuki et al., 2024).

Therefore, this community engagement activity was conducted in the form of airbrush training for students of SMK PGRI 4 Kota Serang. The activity aimed to improve students' painting skills, enhance their creativity in visual design, and foster entrepreneurial spirit through the practical use of airbrush techniques in the automotive field.

Methods

This community engagement activity was carried out at SMK PGRI 4 Kota Serang, located on Jalan Ciruas–Petir Km. 4, Walantaka District, Serang City, Banten, Indonesia. The activity took place on 20–21 May 2024 and involved twelfth-grade students from the Motorcycle Business Engineering program. The participants were selected because they had already acquired basic competencies in motorcycle maintenance and repair, making them suitable candidates for technical painting training. The activity was also supported by an industrial partner, Samurai Paint Kurobushi, through the Samurai Education Painting (SEP) program, which contributed professional trainers and practical materials.

The activity adopted a participatory training method that emphasized active student involvement throughout the learning process. This method was combined with an experiential learning approach, in which students gained understanding and competence through direct experience. Such an approach is widely used in training-based community engagement activities because it enables participants to learn more effectively through demonstration, practice, and reflection (Hidayat et al., 2023). Competency-based training approaches are widely recommended in vocational education because they emphasize the development of practical skills, technical knowledge, and workplace-relevant competencies through direct learning experiences (Khan et al., 2022).

The implementation of the activity consisted of three main stages: preparation, implementation, and evaluation.

Preparation Stage

The preparation stage involved coordination between the community engagement team, the school, and the industrial partner. This coordination included determining the implementation schedule, number of participants, available facilities, and the practical equipment required for

the training. During this stage, the objectives and flow of the activity were also communicated to the students. Participants were asked to prepare helmets as the primary painting media for practice. In addition, the team prepared all supporting tools and materials, including aerosol paint, sandpaper, masking tape, cutters, and other painting accessories.

Implementation Stage

The implementation stage was the core of the activity and was carried out through a combination of lectures, demonstrations, and direct practice. The training began with the delivery of theoretical material by trainers from Samurai Education Painting. The material covered the fundamentals of automotive painting, the introduction of airbrush techniques, the tools and materials used in painting, and basic concepts of color blending and motif design. Students were also introduced to the potential business opportunities in vehicle painting and customization to encourage entrepreneurial awareness.

After the theoretical session, the activity continued with a demonstration of airbrush painting techniques by the trainers. This session provided students with a direct understanding of the correct painting procedures before they practiced independently. The demonstration included several steps, namely media preparation, surface sanding, application of epoxy primer, application of base color, motif creation, and finishing using clear coat. These stages are in line with basic automotive painting procedures commonly used in practical and industrial settings (Islahudin et al., 2020).

Following the demonstration, students conducted direct practice using helmets as painting media. The practical process was carried out in stages. First, students sanded the helmet surface to smooth it and prepare it for painting. Second, epoxy primer was applied as a base layer to improve paint adhesion. After drying, the surface was lightly sanded again before the application of the base color. Students then designed and created motifs using masking tape as pattern boundaries. Finally, the painting process was completed by applying color to the motifs and adding a clear coat to protect the surface and enhance its visual appearance.

Evaluation Stage

The evaluation stage was conducted using an observation-based assessment instrument completed by trainers from Samurai Education Painting and supervising teachers. Three

assessment aspects were evaluated, namely technical competence, creativity, and entrepreneurial awareness. Technical competence was assessed through participants' ability to use painting equipment properly and follow the painting process. Creativity was evaluated based on originality of design, color combination, and motif development. Entrepreneurial awareness was assessed through participants' understanding of business opportunities related to automotive customization services. The results were summarized descriptively to identify the extent of participant achievement in each assessment aspect.

Results and Discussions

Preparation of the Training Activity

The preparation stage played an important role in ensuring that the airbrush training could be implemented effectively. Coordination between the community engagement team, the school, and the industrial partner was carried out carefully to support the success of the activity. This stage included planning the schedule, confirming the number of participants, preparing the location for both theory and practice sessions, and ensuring the availability of the required tools and materials.

Students were informed in advance about the purpose of the activity and the practical equipment they needed to bring, particularly helmets that would be used as painting media. Helmets were chosen because they are relevant to the automotive field and provide a suitable surface for both technical painting practice and artistic design exploration. The curved shape of the helmet surface also presents a practical challenge, requiring students to control spray direction, paint consistency, and precision more carefully.

This stage also included the preparation of supporting materials such as banners, learning materials, and practical equipment. Overall, the preparation stage contributed significantly to the smooth implementation of the activity and created a conducive environment for effective learning.

Figure 1 illustrates the theoretical and demonstration session delivered by trainers from Samurai Education Painting. This stage played an important role in introducing students to airbrush technology and industrial painting standards. The interaction between trainers and

participants also contributed to increasing students' motivation and readiness before entering the practical session.



Fig. 1. Airbrush training presented by Samurai Painting

Implementation of Airbrush Training

The activity began with an opening session attended by the school principal, the supervising lecturer, the community engagement team, and trainers from Samurai Education Painting. This opening session aimed to provide students with an overview of the purpose and benefits of the training, while also motivating them to participate actively throughout the program. The theoretical session introduced students to the fundamentals of airbrush painting, including the types of tools and materials used, the principles of paint spraying, and the stages of the painting process. The trainers also emphasized the importance of creativity in producing attractive visual designs and explained how airbrush skills can be developed into valuable competencies in both industrial and entrepreneurial contexts.

The material was delivered interactively, allowing students to ask questions and engage directly with the trainers. This interactive learning environment contributed positively to students' understanding because they were not merely passive recipients of information but active participants in the learning process. Similar findings have been reported in community-based training activities, where interactive and practice-oriented learning tends to improve participant engagement and understanding.

Practice of Airbrush Techniques

After the theoretical session, students participated in direct practice using helmets as the painting media. This practical component became the most important part of the activity

because it allowed students to apply the concepts and techniques they had learned. The first step involved sanding the helmet surface using fine sandpaper to create a smooth and paint-ready surface. This was followed by the application of epoxy primer, which functioned as a base layer to improve paint adhesion and support the quality of the final coating. The role of epoxy primer is particularly important because it enhances adhesion and helps protect the substrate, thereby improving the durability of the paint layer (Putra et al., 2023).

Once the primer had dried, students lightly sanded the surface again to ensure a smoother finish before applying the base color. The next step was the application of the base color, which served as the main background for the design. After this layer dried, students created motif patterns using masking tape according to their own design ideas. This stage became a space for creative expression, as students were encouraged to determine their own patterns and color combinations.

The painting of motifs required students to pay close attention to spraying distance, paint thickness, and layering consistency. This stage was particularly important because technical precision directly affected the neatness and visual quality of the final result. In automotive painting practice, the quality of the finishing layer is strongly influenced by spraying technique and drying conditions (Hermianto & Utama, 2018). The final stage was the finishing process using clear coat, which functioned to protect the paint and produce a more attractive glossy appearance.

Overall, the students were able to follow the practical steps well. Although the quality of the outcomes varied depending on each student's level of precision and creativity, the practical session demonstrated that students were capable of understanding and applying the basic principles of airbrush painting.

Figure 2 shows students conducting surface preparation and epoxy application activities. These stages are fundamental in automotive painting because they determine paint adhesion and finishing quality. Through direct practice, students gained hands-on experience in following standard painting procedures used in industry.



Fig. 2. Helmet sanding and epoxy activities

Improvement of Student Creativity

One of the most significant outcomes of the activity was the visible improvement in students' creativity. This could be seen from the variety of motif designs and color combinations produced during the practical session. Although all students used the same tools and followed the same technical stages, the final products showed distinct visual characteristics and individual creative expressions. This finding indicates that airbrush training is not merely technical in nature but also serves as a meaningful medium for creative development. Creativity is considered a critical competency in TVET because it supports innovation, problem solving, and the ability to produce value-added products that meet contemporary industrial demands (Hashim et al., 2023). In vocational education, creativity is a valuable competency because it allows students to produce work that is not only functional but also aesthetically appealing and commercially relevant. In the automotive field, creativity can become a distinguishing factor that adds value to products and services, especially in the growing vehicle customization market.

The training also demonstrated that students become more engaged in learning when they are given the opportunity to experiment, create, and express their own ideas. This suggests that practical and creative training models such as airbrush workshops can be highly effective in supporting more meaningful and student centered learning in vocational education.

Figure 3 demonstrates students' creativity in developing various motifs and color combinations. The diversity of final designs indicates that the training successfully encouraged creative thinking and individual expression while applying technical painting skills.



Fig 3. Giving motifs and colors to helmet activities

Development of Entrepreneurial Skills & Spirit

In addition to improving creativity, the training also contributed to the development of students' entrepreneurial awareness. The airbrush skills introduced during the activity have clear economic potential, particularly in the form of helmet painting services, motorcycle body painting, and decorative customization for automotive accessories. Such services are increasingly attractive to consumers, especially among young people who seek personalized and visually distinctive vehicle designs.

Through this activity, students were introduced to the idea that technical skills acquired in school can be transformed into real economic opportunities. This finding supports the view that entrepreneurship education should encourage learners to transform ideas and competencies into social, cultural, or economic value through experiential learning activities (Rodrigues, 2023). This perspective is important in vocational education because it helps students understand that their competencies are not limited to employment pathways alone but can also become the foundation for self-employment and entrepreneurship. In this sense, training activities like this not only strengthen technical competence but also expand students' mindset regarding future career possibilities.

The emergence of entrepreneurial spirit in this context can be seen as an important added value of the training. When technical competence is combined with creativity and business awareness, students are better positioned to respond to labor market demands while also having the confidence to create their own opportunities in the future.

Evaluation of Student Work

A total of 35 students participated in the training, and all participants completed the practical assignment. Based on trainer assessment, more than 80% of participants successfully performed the painting stages independently and produced acceptable finishing quality.

Table 1. Evaluation indicators and achievement results

Assessment Aspect	Indicator	Percentage of Students Achieving Competency
Technical Competence	Proper use of airbrush equipment	80%
Technical Competence	Following painting procedures correctly	88%
Creativity	Ability to create original motifs	85%
Creativity	Appropriate color combination	87%
Entrepreneurial Awareness	Understanding business opportunities in airbrush services	82%
Entrepreneurial Awareness	Interest in developing airbrush-based business activities	80%

The percentage values presented in Table 1 were calculated based on the number of participants who successfully achieved each competency indicator during the practical assessment. The assessment was conducted by trainers from Samurai Education Painting and supervising teachers using an observation checklist. Participants were categorized as achieving competency when they demonstrated the expected performance for each indicator during the training activities. The percentage was obtained by dividing the number of students who met the competency criteria by the total number of participants (35 students) and then multiplying the result by 100%.

The evaluation results indicate that technical competence achieved the highest level of attainment, with 88% of students successfully following the painting procedures and 80% demonstrating proper use of airbrush equipment. These findings suggest that the competency-based and practice-oriented training approach was effective in facilitating skill acquisition. The results are consistent with Khan et al. (2022), who reported that competency-based training improves technical competencies through direct learning experiences and practical assessment. The creativity indicators also showed positive outcomes, with 85% of participants demonstrating the ability to create original motifs and 87% successfully applying appropriate color combinations. The high achievement in creativity indicators demonstrates that airbrush training provided opportunities for students to explore ideas and express individuality through

visual design. This finding supports Hashim et al. (2023), who argued that creativity is an essential competency in TVET because it contributes to innovation and value-added product development. Furthermore, entrepreneurial awareness indicators reached more than 80%, suggesting that students recognized the economic potential of airbrush skills and began to view technical competencies as opportunities for self-employment and business development. This supports Rodrigues (2023), who emphasized that entrepreneurship education should enable learners to transform competencies into economic and social value. Participants were categorized as achieving competency when they met the minimum performance criteria established jointly by trainers from Samurai Education Painting and supervising teachers.

At the end of the activity, the students' works were evaluated by trainers from Samurai Education Painting. The assessment focused on several aspects, including painting neatness, creativity of design, color harmony, and the quality of the finishing result. Based on this assessment, several works were selected as the best outcomes of the training. The evaluation process served not only as a means of measuring technical achievement but also as a form of appreciation for students' effort, discipline, and creativity throughout the activity. Providing recognition for the best works helped increase students' motivation and confidence in their own abilities.

The evaluation results indicate that most participants were able to achieve the expected competencies. Technical competence showed the highest achievement, while creativity and entrepreneurial awareness also demonstrated positive outcomes.

Overall, the results of this community engagement activity indicate that airbrush training had a positive impact on students of SMK PGRI 4 Kota Serang. The activity successfully strengthened students' technical competence in vehicle painting while also supporting the development of creativity and entrepreneurial spirit, which are highly relevant to the goals of vocational education.

Conclusion

The airbrush training conducted at SMK PGRI 4 Kota Serang contributed positively to the development of students' technical competence, creativity, and entrepreneurial insight,

particularly among students in the Motorcycle Business Engineering (TBSM) program. Through a training model that integrated theoretical explanation, demonstrations, and direct practice, students were able to gain practical experience in understanding and applying the stages of airbrush painting.

Evaluation results showed that 80–88% of participants achieved technical competency indicators, while 85–87% demonstrated creativity-related competencies and more than 80% showed entrepreneurial awareness. In addition, the activity helped students recognize that airbrush skills can be developed not only as a vocational competence but also as a potential business opportunity in the field of vehicle painting and customization.

Therefore, practical skills training such as airbrush workshops should be encouraged as part of sustainable vocational learning activities. Stronger collaboration between schools, universities, and industry partners is also necessary to provide students with more relevant, up-to-date, and industry-oriented learning experiences. In this way, vocational graduates can be better prepared to become competent, creative, and adaptive individuals who are capable of entering the workforce or creating independent business opportunities.

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provide meaningful benefits in strengthening students' skills, creativity, and entrepreneurial awareness in the field of automotive painting and modification.

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