



## **Strategies to Strengthen Vocational Education in Islamic Contexts: Preparing Madrasah Aliyah to Face the Challenges of Industry 4.0**

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### **ABSTRACT**

Many efforts have been made to strengthen vocational education in Madrasah Aliyah, one of which is by implementing skills education. However, this effort has not been running optimally because the right strategy has not been implemented. This study aims to analyze the strategy for strengthening vocational education in Madrasah Aliyah in responding to the challenges of the industrial era 4.0. This study examines how the orientation of the curriculum and school culture develops in Madrasah Aliyah so that they are relevant to the business world and industry and maintain their Islamic existence. This study uses a qualitative phenomenological approach involving two Madrasah Aliyah in West Java: MAN 1 Garut and MAN 3 Tasikmalaya City. Using a purposive sampling technique, the researcher selected two principals, eight vice principals, 15 teachers, and 45 students, each representing each school. The results of the study indicate that the strategy for strengthening vocational education in Madrasah Aliyah is to implement skills education that is linked and matches and is relevant to the demands of the Industrial Revolution 4.0 by considering three aspects, namely the curriculum, school culture-oriented towards Islamic culture, and building partnerships with the Business World and Industry. This study concludes that implementing vocational education by organizing several skills education in Madrasah Aliyah is the right choice in responding to the challenges of Industry 4.0, especially the demands of the world of work. This study recommends the importance of preparing entrepreneurial competencies for Madrasah students so that they are ready to face the challenges of the world of work in the era of the Industrial Revolution 4.0.

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**ABSTRAK**

Banyak upaya yang dilakukan untuk memperkuat pendidikan vokasi di Madrasah Aliyah salah satunya melalui penyelenggaraan pendidikan keterampilan. Namun upaya ini belum berjalan maksimal karena belum ditemukannya strategi yang tepat dalam mengimplementasikannya. Penelitian ini bertujuan untuk menganalisis strategi penguatan pendidikan vokasi di Madrasah Aliyah dalam menjawab tantangan era industri 4.0. Penelitian ini mengkaji bagaimana orientasi kurikulum dan budaya sekolah yang berkembang di Madrasah Aliyah sehingga memiliki relevansi dengan Dunia Usaha dan Industri tetapi tetap mempertahankan eksistensi Keislamannya. Penelitian ini menggunakan pendekatan kualitatif fenomenologi yang melibatkan dua Madrasah Aliyah di Jawa Barat, yaitu MAN 1 Garut dan MAN 3 Kota Tasikmalaya. Dengan menggunakan teknik pengambilan sampel secara purposive, peneliti memilih 2 orang kepala sekolah, 8 orang wakil kepala sekolah, 15 orang guru dan 45 orang siswa masing-masing perwakilan dari tiap sekolah. Hasil penelitian menunjukkan bahwa strategi penguatan pendidikan vokasi di Madrasah Aliyah ialah dengan mengimplementasikan pendidikan keterampilan yang link and match dan relevan dengan tuntutan revolusi industri 4.0 dengan memperhatikan tiga aspek yaitu kurikulum, budaya sekolah yang berorientasikan pada budaya Islami, dan membangun kemitraan dengan Dunia Usaha dan Industri. Penelitian ini menyimpulkan bahwa pelaksanaan pendidikan vokasi dengan menyelenggarakan beberapa pendidikan keterampilan di Madrasah Aliyah merupakan pilihan yang tepat dalam menjawab tantangan industri 4.0, khususnya tuntutan dunia kerja. Penelitian ini merekomendasikan pentingnya mempersiapkan kompetensi kewirausahaan siswa Madrasah agar siap menghadapi tantangan dunia kerja di era Revolusi Industri 4.0.

**KATA KUNCI**

Pendidikan Vokasi, Pendidikan Keterampilan, Era Industri 4.0, Pendidikan Islam, Keterampilan Abad 21

## Introduction

The Indonesian government has carried out efforts to strengthen vocational education, one of which is by the Ministry of Religion. In recent years, the Ministry of Religion has been intensively organizing vocational education in Madrasah Aliyah, one of which is through the Madrasah Aliyah Plus Skills program, held in several Madrasah Aliyah, both State and Private in Indonesia. The regulation governing the implementation of skills-based vocational education in Madrasah Aliyah is the Decree of the Director General of Islamic Education No. 1023 of 2016 concerning Guidelines for the Implementation of Skills Programs in Madrasah Aliyah and was later updated by the Decree of the Director General of Islamic Education No. 5466 of 2019 concerning Technical Instructions for the Management of Madrasah Aliyah Plus Skills Learning. Both regulations were then strengthened by the Decree of the Director General of Islamic Education No. 2851 of 2020 concerning the Determination of Madrasah Aliyah Plus Skills in 2020. The regulation states that Madrasah Aliyah Plus Skills is a State or Private Madrasah Aliyah with a competitive advantage in a particular vocational or skills field. Madrasah Aliyah Plus Skills, according to this regulation, is essentially a Regular Madrasah Aliyah that organizes additional skills education programs as one of the elective subjects. Students receive additional skills lessons according to their respective talents and interests. Therefore, Madrasah Aliyah Plus Skills is not a Vocational Madrasah Aliyah. Providing vocational education content in Madrasah Aliyah is a positive thing. This certainly provides a means of channelling students' talents in a positive direction. One statement says that it is better to go to school than to play (Khozin, 2022). This is not without reason because parents feel calm when their children are at school, especially if the children are equipped with adequate expertise.

The presence of Madrasah Aliyah Plus Skills, which organizes vocational education that integrates various skills such as personal, social, academic and vocational skills, is expected to provide colour and choice for people who want to send their children to Madrasah Aliyah amidst the proliferation of vocational-based educational institutions such as SMK which its presence has not been able to provide maximum contribution in reducing the Open Unemployment Rate in Indonesia, as evidenced by SMK graduates ranking first in contributing to open unemployment figures consistently from 2019 at 10.36%, in 2020 at 13.55% and 2021 at 11.13% (<https://www.bps.go.id>).

Why is it important to hold vocational education in Madrasah Aliyah, especially in facing the 21st century with the birth of the Industrial Revolution 4.0? One perspective suggests that the deficiency in life skills education, encompassing vocational training, constitutes a fundamental issue within the educational landscape in Indonesia, affecting all levels from Elementary School to Doctoral studies (Prastowo & Sutrisno, 2021). Formal education in Indonesia, from Elementary School to College, has never been taught; if it is taught, the intensity is still very little or limited. Educational institutions do not teach how to learn, how to plan life, how to solve problems, how to manage time, how to think positively or how to develop self-potential (Prastowo & Sutrisno, 2021).

In some people's view, there are significant differences between madrasahs and schools, although, in reality, madrasahs and public schools have similarities. Regarding similarities, the general subject curriculum taught in madrasahs is 100% the same as in schools. The difference is that madrasahs have a plus point compared to public schools, namely that madrasahs have a curriculum set by the Ministry of Religion with special additions for several subjects, including Arabic, Fiqh, Al-Qur'an and Hadith, History of Islamic Culture, and Aqidah Akhlak (Mudlori & Basit, 2019). Meanwhile, in public schools, the religious subject matter is less than that held in madrasahs. There are now several schools with a boarding system that provide religious education with more hours and subjects. In its implementation, vocational education in Madrasahs is expected to have an impact on the economic empowerment of Madrasah residents by strengthening collaboration with other institutions (Mohsen et al., 2022).

However, several efforts made by the Ministry of Religion have not had a significant impact on the output of Madrasah Aliyah; this can be seen from the results of the Education Sector Analytical and Capacity Development Partnership study, which found that only 20% of the total Madrasah Aliyah graduates obtained jobs in the formal sector. They received the job between 0-6 months after graduating from Madrasah Aliyah. However, only around 10% of them could maintain their jobs because of the difficulty adapting to the workplace culture that enforces high discipline, work speed, and physical discomfort. Data shows that very few Madrasah Aliyah graduates get jobs in the formal sector. Around 30% of Madrasah Aliyah graduates continue to higher education, while the rest struggle in the informal economy or are unemployed or underemployed. At the same time, the other 50% of Madrasah Aliyah graduates cannot be traced (ACDP, 2017).

In addressing the challenges presented by the Industrial Era 4.0 and society 5.0, vocational skills, as one of the leading programs, is important to be taught in Madrasah Aliyah Or Islamic educational institutions such Pesantren (Rahim et al., 2024). Vocational skills pertain to a range of specific job types present in society. These skills are categorized into basic vocational skills and occupational skills. Basic vocational skills encompass the effective use of fundamental tools, such as hammers and screwdrivers or other tools. Occupational skills are only needed by students who want to pursue a job in their field, such as pharmacists, craftsmen, mechanics, and others (Depdiknas, 2010). Vocational skills relate to several skills that students must possess, especially those related to work

competencies or the world of work. Vocational education provides practical skills that enable individuals to foster meaningful engagement in a particular work activity (Agrawal, 2013). By implementing vocational education at Madrasah Aliyah, the profile of graduates is expected to be ready to face the industrial era 4.0.

The Industrial Era 4.0 is marked by integrating the Internet of Things, artificial intelligence, advanced robotics, automated vehicles, 3D printing, biotechnology, and digital, virtual, and physical systems collaborating globally (Vera Wardina, 2019). The transformation of curriculum, learning, and education during the Industrial Revolution 4.0 changed the concept of learning, which places students at the center of learning while the role of educators is as guides and facilitators. Students can interact with educators, friends, or other experts. In addition, they are also expected to have 21st-century skills (Mastiyah, 2008), which are shown by at least five characteristics, namely Having multi-skills, Flexible, flexible in adapting to various new skills, and lifelong learners; Having a strong and literate character; Innovative and entrepreneurial; and Global citizenship is being able to become a global citizen without losing their identity as Indonesians (Arifin, 2019).

The implementation of vocational education in Madrasah Aliyah is one of the strategies carried out by the Ministry of Religion to strengthen the skills of Madrasah students in their readiness to address the challenges presented by industry 4.0. Therefore, an effective and efficient method is needed so that students have the competencies that are in accordance with their needs (Siregar et al., 2022). Of course, this must get support from the madrasah itself in several aspects, such as policies, facilities and infrastructure, provision of teachers who possess qualifications aligned with their areas of expertise and adequate funding (Lisyawati et al., 2023). The manifestation of this vocational education is skills education in several Madrasah Aliyahs determined by the government.

Based on several previous studies, it can be mapped that existing studies tend to discuss several aspects of vocational education, including management (Kiragu, 2016), learning (Wahyuni, 2017), skills (Meyer, 2015), character (Eisa & Khalid, 2018), intra-curricular and extracurricular (Eferri, 2017). Several of these studies do not specifically examine how educational institutions develop vocational education based on the principles of Islamic education, the school culture built, and building partnerships with the business world and industry.

This study seeks to answer the strategies that Madrasah Aliyah carries out in strengthening vocational education and the readiness of Madrasah Aliyah students to Address the challenges of the Fourth Industrial Revolution. This study attempts to offer a distinctive strategy carried out by Madrasah Aliyah as an Islamic educational institution compared to other educational institutions, such as vocational schools or senior high schools, which both provide vocational education. Therefore, the strategy carried out by Madrasah Aliyah must be right to integrate Islamic values with the vocational education taught. The implementation of vocational education must not shift the values of Islamic education that exist in Madrasah Aliyah as its main characteristics. However, vocational education supports and strengthens Madrasah Aliyah as an Islamic educational institution. In this case, the task of Madrasah is to integrate academic skills, vocational skills, and competencies into Islamic education.

With this implemented strategy, it can be said that vocational education developed in Madrasah Aliyah represents a strategy for developing vocational education based on Islamic educational values, where aspects of vocational education are not only on mastering hard skills but also soft skills and reflecting the character of a faithful student, has noble character and has an Islamic character. This vocational education encourages

someone to have independence and spiritual intelligence, especially with personal skills that encourage someone to get closer to the Creator.

Vocational education in Madrasah Aliyah is held to realize that individuals who are pious to Allah, have noble morals, produce honest students, have good character, are disciplined, respect each other, are fair and ethical, polite, and productive personally and socially. The core of Islamic education is education related to transformative faith and piety. Moral education can be translated as internalizing noble moral values to students so that these values are firmly embedded in their mindset or thought patterns, words and actions, and their interactions with God, humans, and their environment. These values then form a transcendental-spiritual, sociological, and ecological vision. These noble moral values are expected to be inherent in them to form their behavioral culture and character.

Based on this background, this study also seeks to answer several specific questions, including How is the orientation of the curriculum and learning of vocational education in Madrasah Aliyah facing the industrial era 4.0?, What is the school culture that is developing in Madrasah Aliyah?, How does Madrasah Aliyah build partnerships with the Business World and Industry to build Links and Matches?. The research was conducted at MAN 1 Garut and MAN 3 Tasikmalaya City, which organize vocational education in skills education.

## Methods

This research falls within the domain of qualitative research, employing a phenomenological approach. Qualitative research is used in this study because the problems are unclear, holistic, complex, dynamic and meaningful, especially those related to the strategy of strengthening Vocational education in Madrasah Aliyah in responding to the challenges of the 4.0 revolution era. In addition, researchers conducted a literature study using data collected and analyzed from several primary and secondary sources.

The research was conducted at MAN 1 Garut and MAN 3 Tasikmalaya City, providing vocational education in the form of skills education. The determination of the research locus was based on several considerations. First, MAN 1 Garut was the first MAN Pioneer of Skills Program in Indonesia together with MAN Kendal and MAN Jember through UNDP assistance on December 14, 1987. Second, Based on data from the Madrasah Division of the Regional Office of the Ministry of Religious Affairs of West Java Province, MAN 1 Garut is included in the Madrasahs that provide the best Life Skills education in West Java. Third, MAN 1 Garut is strategically located in the heart of Garut City. The location of this madrasah is close to various factories, various leather crafts, home industry businesses, trade, and various other small and medium enterprises, as well as densely populated housing that is religious. While MAN 3 Tasikmalaya City was chosen because it is the only State Madrasah in Tasikmalaya City that provides Skills education which is located in the Mathlul Khaer Cintapada Islamic Boarding School environment which was initially an extracurricular activity, then became an extracurricular activity after being determined by the Ministry of Religious Affairs. In addition, in the MAN 3 Tasikmalaya City environment, various industrial activities such as automotive, embroidery, sandals, and fisheries are also developing. MAN 1 Garut organizes several skills education courses, including automotive light vehicle engineering, motorcycle engineering and business, power electronics and communication engineering, fashion design, and computer network engineering. Meanwhile, MAN 3 Tasikmalaya City organizes skills education, including computer and network engineering, fashion design, and barista.

The main data sources in this study are data obtained from field research, which is determined purposively through interviews with madrasah managers such as madrasah principals, vice principals of madrasahs, teachers, students, alums, the business world and industry, and the community as stakeholders; observations of the implementation of Vocational education learning; and documentation studies of various Vocational education activities. The primary data sources are gathered through documented notes, as well as video and audio recordings, along with photographic evidence. At the same time, secondary data is obtained from various library sources by vocational education, such as literature, books, journals, and other relevant writings, to enrich the research data. In this study, the researchers employed a range of data collection techniques, including observation, interviews, documentation, and literature reviews. Using purposive sampling techniques, researchers selected two principals, eight vice principals, 15 teachers, and 45 students, each representative of each madrasah, graduates, the Business World and Industry, and related stakeholders. The data analysis approach utilized is the Spradley model, which encompasses four distinct stages: domain analysis, taxonomy analysis, componential analysis, and cultural theme analysis.

## Results

### Curriculum Orientation and Vocational Education Learning

Decree issued by the Director General of Islamic Education No. 5466 of 2019 states that Madrasah Aliyah Plus Skills is a State or Private Madrasah Aliyah that has a competitive advantage in a particular vocational or skills field. Madrasah Aliyah Plus Skills is essentially a Regular Madrasah Aliyah that organizes additional skills education programs as one of the elective subjects. Among the Madrasah Aliyah in this category are MAN 1 Garut and MAN 3 Tasikmalaya City. Based on the Decree issued by the Director General of Islamic Education No. 2851 of 2020 concerning the determination of Madrasah Aliyah Plus Skills, MAN 1 Garut offers five vocational education programs, including Automotive Light Vehicle Engineering, Motorcycle Engineering, and Business., Power Electronics and Communication Engineering, Fashion Design and Computer Network Engineering. MAN 3 Tasikmalaya City organizes three skills education programs, namely Fashion Design, Computer Network Engineering, and Barista.

The curriculum, as outlined in Law No. 20 of 2023 on the National Education System, constitutes a comprehensive framework comprised of plans and regulations pertaining to educational objectives, content, learning materials, and the methodologies employed. It serves as a guiding structure for organizing learning activities aimed at achieving specific educational goals. The curriculum is also a tool to develop students' life skills education (Saridudin, 2020). In accordance with Gagne's perspective, learning is characterized as a process whereby an organism modifies its behavior based on its experiences (Fatoni, 2011). The vocational education curriculum at Madrasah Aliyah is developed based on the fact that this Madrasah Aliyah is an educational institution with Islamic characteristics, which, in its implementation, makes Islamic values the main foundation for developing its curriculum. The basis for developing the vocational education curriculum at MAN 1 Garut and MAN 3 Tasikmalaya City is based on the needs of students in facing developments in society that are so rapid and dynamic, especially related to work. On the other hand, strengthening academic-based learning in Madrasah Aliyah needs to consider the context, input, process and output (Taufik et al., 2021).

Vocational education in both Madrasahs is in the form of skills education with a curriculum structure referring to the provisions contained in KMA No. 184 of 2019 regarding protocols for Curriculum Execution in Madrasahs. Referring to this regulation,

it can be seen that the Curriculum Structure of MAN 1 Garut and MAN 3 Tasikmalaya City as Madrasah Aliyah Plus Skills has a number of teaching hours per week, and what distinguishes this madrasah from other Madrasah Aliyah is the existence of an interest in the form of Skills subjects as elective subjects with a total of 6 teaching hours per week.

Vocational education at MAN 1 Garut and MAN 3 Tasikmalaya City is oriented so that students have various skills, especially to face the competition of the 21st-century work world with the birth of the Industrial Revolution 4.0. Initially, vocational education in these two madrasahs was prepared for students who wanted to work and did not have the desire to further their education by pursuing advanced studies. However, in its development, this orientation shifted because it turned out that many graduates of Madrasah Aliyah Plus Skills also continued their studies at universities; some worked, and some did their own business. So to respond to these three interests, MAN 1 Garut, for example, issued a motto: "You Can Study, You Can Work." Based on the data, information was obtained that both MAN 1 Garut and MAN 3 Tasikmalaya City tried to answer various challenges in tackling the challenges of the Fourth Industrial Revolution by orienting vocational education to four aspects, namely the needs of students, the needs of the market, especially the business world and industry, the needs of society and the needs of Islamic education.

First, the needs of students cover three needs, namely those who continue their studies, work, and become entrepreneurs. Based on research on students of MAN 1 Garut and MAN 3 Tasikmalaya City, it was obtained that their orientation after graduating was very varied, namely for those who wanted to continue their studies, they reasoned that they wanted to pursue higher education, wanted to become civil servants, namely ASN, TNI and Polri because they wanted to broaden their horizons and knowledge so that it would be easy to find a job after graduating from college. Meanwhile, those who chose to work and become entrepreneurs reasoned that they wanted to develop their abilities in working, wanted to have their income or earnings, wanted to help their parents, and wanted to work immediately after graduating.

Students who wish to pursue their education at a more advanced level of education, especially students who choose regular programs in the interests of Science, Social Sciences, and Religion. However, this does not mean that students who choose skills programs do not continue to college, because both regular and skills programs, many of them continue to a higher level; even the data obtained by researchers explains that most of those who continue their studies at MAN 1 Garut and MAN 3 Tasikmalaya City are graduates of skills education programs. According to data held by MAN 1 Garut in 2022, graduates who continue to college are 30%, work 35%, become entrepreneurs 15%, and 20% have yet to be identified. Moreover, of the 30% who continue, it is dominated by graduates of skills education. The variation of MAN 3 Tasikmalaya City graduates is 42.9% continuing their studies, 28.6% working, 14.3% becoming entrepreneurs, and the remaining 14.3% have yet to be identified. What happened is in line with what Anwar said: One of the roles of vocational education is to equip students for pursuing advanced education (Anwar, 2015).

Graduates who want to work in the industrial era 4.0, of course, must be ready to face the world of work in various companies, industries, or agencies, both government and private. The vocational education curriculum that is oriented towards the world of work means that every content or content of the curriculum can produce students who have the capacity, intellectual abilities, and skills that the business world and industry or other institutions can absorb. Meanwhile, for graduates who want to be entrepreneurs or open their jobs, schools must facilitate, plan, and design a curriculum that can produce

students who have an independent character and are not only oriented to becoming employees or employees but can create jobs for others. In this context, entrepreneurship lessons are a promising alternative solution (Faturahman et al., 2023). Before students enter society, they are given knowledge related to entrepreneurship.

Second, orientation to market needs, especially in the World of Work and Industry. The Link and Match policy involves identifying the skills that are essential for navigating the future job market. Vocational education is shifting its focus from being supply-driven to being demand-driven, aligning with market requirements to help decrease the unemployment rate among madrasa graduates. The idea of establishing a connection between educational institutions and the workforce is perceived as optimal because this concept will create a relationship between suppliers of workers and their users (Disas, 2018).

Third, orientation to community needs. The curriculum that is developed must be relevant to the needs of the community; this is what is called the principle of relevance (Sanjaya, 2010). Vocational education at MAN 1 Garut and MAN 3 Tasikmalaya City strives to be developed in a relevant manner both internally and externally. Internal relevance relates to the curriculum that is developed and is relevant to various components, such as objectives, content, materials, methods, and learning experiences that students must have. External relevance relates to the vocational education that is carried out relevant to various community needs, including relevance to the student's living environment, meaning it must be in accordance with the conditions of the surrounding community. In addition, it must also be relevant to the demands of the times, both now and in the future, and no less important is relevant to the world of work faced. This is in line with Proser's statement that vocational education will be effective if each student is equipped with his interests, talents, and intelligence at a higher level. Vocational education is an efficient social service if it is in line with the requirements of the community when it is needed, and it is most effectively done through skills education (Sudira, 2013).

Fourth, orientation towards the needs of Islamic education, namely to form students of MAN 1 Garut and MAN 3 Tasikmalaya City who have an Islamic character, positive, noble, disciplined, personable, dynamic, optimistic, independent, responsible, skilled, creative, and innovative. This aspect is related to the interests of the madrasah as an organization to achieve the desired performance (Fory et al., 2021). This is a manifestation of the formation of soft skills needed in facing the flow of globalization, one of the negative impacts of which is pragmatism and secularism, which require touches of religious values. The 2003 National Education System Law dictates that the role of education is to cultivate individuals who have faith in and are devoted to God Almighty, possess good character, maintain good health, are knowledgeable, skillful, creative, self-reliant, and become responsible and democratic members of society.

### **Thriving School Culture**

Stolp and Smith, as quoted by Widodo, stated that school culture is a historical pattern that includes traditions, values, norms, beliefs, and myths that are understood by school residents at various levels (Widodo, 2017). School culture is related to the activities or habits of school residents that have been formed and agreed upon jointly by stakeholders, both internal and external, that can be used as a guideline for acting and become a school identity as a differentiator between one school and another.

School culture is owned by every educational institution, including MAN 1 Garut and MAN 3 Tasikmalaya City, such as Madrasah Aliyah Plus Keterampilan. The school culture that develops in both madrasahs is more oriented towards developing an Islamic school



culture. This is because both MAN 1 Garut and MAN 3 Tasikmalaya City are schools with Islamic characteristics, as seen in the vision and mission of both madrasahs. MAN 1 Garut, for example, has a vision of a "Quality madrasah with independent, Islamic, and high-achieving graduates." Some school cultures that reflect Islamic values that develop in MAN 1 Garut include Duha Prayer Activities, Studying the Qur'an, Congregating Duhur and Asr Prayers, Commemorating Islamic Holidays, Social Religious Activities, and the habit of Qurban. In addition, a school culture is also developed that is oriented towards developing an academic culture, such as the Madrasah Science Competition activity. Meanwhile, the school culture in the form of extracurricular activities developed by MAN 1 Garut includes the Class Representative Council, Intra-School Student Organization, Paskibra, Mosque Youth Association, Tilawah and Tahfid Al-Qur'an, Scouts, PMR, School Security Patrol, Journalism, Arts and Academic Club Association.

Likewise, the school culture that develops in MAN 3 Tasikmalaya City is more oriented towards developing Islamic school culture; this is inseparable from the environment around MAN 3 Tasikmalaya City, which is located in the Mathlul Khaer Cintapada Tasikmalaya Islamic Boarding School environment, so the cultures that develop in this Madrasah reflect the cultures of the pesantren, even the majority of students in this Madrasah are students at the pesantren. This is also reflected in the vision of this Madrasah, namely "The realization of MAN 3 Tasikmalaya City as the Leading Islamic High School in Tasikmalaya City with graduates who have the Strength of Imtaq and Science, have Noble Morals, are Skilled and Independent". The cultures that develop in this Madrasah are the same as in MAN 1 Garut, including Duha Prayer Activities, Reciting the Qur'an, Congregating Duhur and Asr Prayers, Commemorating Islamic Holidays, Social Religious Activities, Qurban, and Madrasah Science Competitions. Meanwhile, the school culture in the form of extracurricular activities developed by MAN 3 Tasikmalaya City includes Scouts, PMR, Paskibra, Martial Arts, Nasyid, Marawis, Kalighrafi, Youth Scientific Work, English and Arabic Club, LPTHQ, Hadroh and Sports Development. Some of these school cultures are expected to become character models that develop into habits in Madrasahs (Supendi & Hasanah, 2020).

In terms of habituation, the school culture that has developed in MAN 1 Garut includes the Morning Greeting Activity or madrasah care, namely the extracurricular instructors and officers who are appointed to greet students in the morning; 10-minute Al-Qur'an reading activity before learning activities are carried out; Guided Duha Activity; In terms of order, a point system is implemented for students who violate school regulations; Congregational Duhur and Asr Prayer Activities and achievement development activities as concentrated support for learners who are prepared to participate in various academic and non-academic competitions. Meanwhile, in MAN 3 Tasikmalaya City, the habituation carried out includes being oriented towards Tahfid Al-Qur'an.

### **Partnership with Business and Industry**

The term partnership is derived from the word partner; as defined by the Big Indonesian Dictionary, partners are friends, best friends, work colleagues, work partners, and colleagues. At the same time, partnership is defined as a relationship or network of cooperation as partners (Kemdikbud, 2022). Frank and Smith, as quoted by Herminarto Sofyan, said that "partnership is a relationship between two or more parties from individuals/groups who have the same goals, forming a joint agreement to do something. Partnership is a mutually beneficial collaboration to achieve goals that may not be achieved alone (Sofyan, 2019). Partnership, according to McGeorge, Zou, and Palmer, as stated by Sutopo, is a relationship between humans and stakeholders that is based on a balance of power (Sutopo, 2019).

As a madrasah that provides vocational education, MAN 1 Garut has established several partnerships with various Business Worlds and Industries. The forms of partnerships between MAN 1 Garut and the World of Work and the World of Industry include (1) Industrial visits, namely visits by students to industry aimed at increasing insight and knowledge of the world of work, (2) In-House Training, namely training for students held at the madrasah by presenting instructors from the world of work or other competent institutions, (3) Internship/Field Work Practice, namely activities to place students in the world of work in order to improve skills/work practices, (4) Competency Tests for student skills and (5) Distribution of workers for alums according to their field of expertise in the world of work.

The purpose of the partnership with the business world and industry developed by MAN 1 Garut, as stated by the head of the madrasah, is to "provide opportunities for students to learn in the real world." With this partnership, students can feel the benefits because they can conduct industrial visits or Field Work Practices in several companies that have collaborated with the madrasah. This will certainly be very beneficial for them because it will provide a different experience from what they experience and get at school.

Strengthening institutional networks has been carried out by these two madrasahs as an effort to make contact and communicate with the business world and industry; This is carried out to gather insights regarding the requirements, advancements, and circumstances of the business sector and industry, along with the changes happening within society. Furthermore, it involves partnering with the business sector and industry, these two madrasahs also involve the role of alums. Some of these roles include. First, alums act as catalysts; in this context, the role of alums is to build strong and deep-rooted emotional bonds in society. Second, alums act as contributors; namely, they play a role in devoting something, both materially, such as goods, money, and the like, or morally, such as providing criticism and suggestions for the progress of educational institutions, providing various assistance to educational institutions, and so on. Third, the role of alums as iron stock, namely, alums act as cadres or sources of regeneration if, at some time, this educational institution needs Human Resources, either teachers or other administrative staff (Badruttamam et al., 2023).

By producing graduates who are able to penetrate four different job markets, namely continuing their studies, working, entrepreneurship, and other jobs, it shows that the acceptance of society and the job market towards MAN 1 Garut alums is quite high, meaning that MAN 1 Garut graduates can contribute to society with a wide scope, this also shows that MAN 1 Garut strives to produce graduates Who acts as the connection between educational institutions and the world of business and industry. However, around 5.9% of alums still need clarification statuses, and there is a possibility that they have not found work or are unemployed. This certainly must be a concern for MAN 1 Garut in the future, especially for those who do not continue their studies to be able to find work more easily. When compared to MAN 1 Garut, which is also a Madrasah Aliyah Plus Skills in terms of workforce absorption, it is clear that MAN 1 Garut graduates can be more competitive in entering the world of work; this is proven by the graduates who work reaching 50% while MAN 3 Kota Tasikmalaya is only 28.6%. However, in terms of graduates who are entrepreneurs, there are almost similarities between the two Madrasahs, where MAN 1 Garut graduates who are entrepreneurs or have opened their jobs are 14.7%. At the same time, MAN 3 Kota Tasikmalaya is similar at 14.3%. With these data, it is clear that both MAN 1 Garut and MAN 3 Kota Tasikmalaya still need to improve in the aspect of entrepreneurship. In fact, entrepreneurship itself is taught in both Madrasahs, and it is hoped that graduates of this Skills Madrasah will produce future entrepreneurs.

The data submitted related to alums of MAN 1 Garut and MAN 3 Tasikmalaya City shows that alums have played a role and contributed and given color to the life of the community. In a wider area, alums can be empowered by the madrasah in providing various contributions such as providing ideas in formulating concepts to enhance the quality of educational services, aiding in the delivery of training or diverse information required by the madrasah community, and offering both moral and financial support for various needs of the madrasah in improving quality, facilities and other facilities, providing scholarships to students who excel and those who are economically disadvantaged, and connecting the madrasah with various parties related to various parties who can contribute to developing educational institutions to be more advanced in the future (Prihatin, 2012).

## Discussion

This study reveals three strategies carried out by Madrasah Aliyah in strengthening vocational education in the efforts of madrasahs to answer the challenges of Industry 4.0, namely by clarifying the orientation of the curriculum, developing school culture, and strengthening partnerships with the Business World and industry. The vocational education curriculum at Madrasah Aliyah is oriented to answer four interests, namely the interests of students, society, the Business World and Industry, and the interests of Islamic Education.

In its implementation, these various orientations are the basis for developing the vocational education curriculum in these two Madrasah Aliyah, which can be viewed from four sides: philosophical, psychological, sociological, and technological developments. Philosophically, this orientation provides a direction for where the vocational education being implemented will be taken. In this context, it is important to consider what Herbert Spencer said as a source in formulating educational goals, namely Self-Protection, Ensuring access to life's essentials, Raising a family, Sustaining appropriate social and political connections, and Valuing recreational time. (Mubarok et al., 2021). This orientation ensures the survival of each individual so that they can use their free time to engage in productive activities.

This aligns with what was communicated by The United States Office of Education in 1918 with the concept of "Seven Cardinal Principles," namely Wellness, Mastery of Essential Skills, Valuable Community Membership, Professional Competence, Civic Responsibility, Constructive Use of Free Time, and Fulfillment of Spiritual Needs (UPI MKDP Development Team, 2011). Philosophically, the orientation of the development of the vocational education curriculum in these two madrasahs is largely inspired by Charles Proser's vocational education philosophy and John Dewey's pragmatism, namely that students are expected to work immediately after graduating. In Indonesia, vocational and vocational education, as stipulated in Law Number 20 of 2003, is more directed towards the essentialism philosophy of the Prosser school, while PP 19 of 2005, which explains the Competency Standards for Vocational High School Graduates, is more directed towards the pragmatism philosophy of John Dewey's school (Verawardina & Jama, 2018).

Meanwhile, psychologically, the age of Madrasah Aliyah students is in the middle school range, namely 16-18 years; at this age, according to Rousseau, they are in the fourth stage, namely Puberty (Bahri, 2019). This period is important because children begin to seek identity, including the desire to have certain skills. From a sociological perspective, it can be seen that all students are unique individuals; they are expected to grow into social agents in their society (Khalim, 2019). Likewise, from the perspective of the development of science and technology, vocational education at MAN 1 Garut and

MAN 3 Tasikmalaya City is an effort to prepare students to face technological developments so that they have strength, and it is also hoped that they can produce technology that can advance world civilization (Sukirman, 2007). Technological developments require students to master knowledge, skills, and abilities. This means that the birth of new jobs requires new skills that must be prepared by schools (Sukmadinata, 2010). The characteristics of vocational education in the vocational field like this can be carried out if it is developed and practiced on the basis of the philosophy of idealism, realism, pragmatism, and reconstructionism simultaneously or eclectically (Pardjono, 2019).

In general, philosophically, psychologically, and sociologically, the curriculum implemented must pay attention to local culture from various aspects (Mulyana et al., 2023). Madrasahs or schools should not automatically imitate the curriculum from a Western or Middle Eastern perspective because it may not be suitable for the school's culture itself. If forced, it can cause instability in a school. The orientation of a curriculum must be directed so that students are ready for the next level of education, ready to work, and ready to be entrepreneurs while maintaining the character of madrasah students as an educational institution with an Islamic character (Hidayatulloh et al., 2024).

In terms of school culture development, the school culture at MAN 1 Garut and MAN 3 Tasikmalaya City revolves around intracurricular and extracurricular activities. The activities in the form of school culture in these two madrasahs, when viewed comprehensively, need to reflect strong support for the full development of vocational education. The existing activities are limited to the habituation of religious education and extracurricular activities, while the school culture that specifically strengthens vocational education has yet to be fully apparent. In fact, the school culture to strengthen vocational skills education can be developed in several activities such as strengthening extracurricular activities, habituation activities, strengthening school regulations, strengthening the guidance function, including the functioning of the school canteen, school cooperatives, organizing bazaars, skills exhibitions, online business guidance and creating business units managed by students to strengthen entrepreneurship.

In facing the industrial era 4.0, school culture is expected to strengthen soft skill aspects such as independence, collaboration, discipline, a sense of responsibility, a sense of togetherness, and tolerance, and strengthen students' learning motivation. Therefore, to strengthen this in the future, it is necessary to consider Artificial Intelligence as a subject or extracurricular activity (Ramli et al., 2024) In addition, in facing the 21st century with the presence of the industrial era 4.0, school culture can also be done through the School Literacy Movement. The goal of School Literacy is to form literate school citizens in terms of reading and writing, numeracy, science, digital, financial, culture, and citizenship. Literacy is always identical to reading and writing, even though there are at least six literacy components that need to be developed in schools, namely, Fundamental Literacy, Essential Literacy, Library Skills, Media Skills, Digital Literacy, and Visual Interpretation Skills (Wiedarti et al., 2018).

In terms of partnerships, MAN 1 Garut and MAN 3 Tasikmalaya City have built partnerships with several business and industrial worlds in West Java. This is in line with what Herminarto Sofyan said: that the purpose of partnerships with the industrial world is to increase the participation of the industrial world community, namely to foster interest and participation of the industrial community in school development (Sofyan, 2019). Partnerships are built on flexible, easy-to-understand, and enjoyable principles and are accompanied by clear agreements. The joint agreement is not only intended as a complementary requirement for legal regulations. However, it is expected to provide

clarity to all parties related to what partnerships are being run, who does what, and what the expected results are (Sofyan, 2019). There is a need for serious efforts to build partnerships between vocational education and the business and industrial world so that the younger generation is ready to work meaningfully in the future (Sutopo, 2019).

For this reason, there is a need for cooperation between vocational education, the business world, and the industrial world so that the partnership program can run smoothly and can achieve the expected goals, which, of course, must be implemented by paying attention to the following principles: first, mutual benefit, where cooperation can provide mutually beneficial benefits, second, mutual strengthening, where cooperation can strengthen each other in facing competitors from outside, third, mutual need, where cooperation can require each other if vocational education requires the business world and industry to accept graduates of vocational colleges (Sutopo, 2019).

One of the results of MAN 1 Garut's collaboration with the Business and Industrial World is the internship program, or Field Work Practice, carried out by students in various companies. Internship or PKL is a learning activity in the field that is intended to introduce and develop students' skills in the real world of work (Suharyanti, 2015). The benefits of this program include students gaining work experience, being able to improve their skills, increasing their relationships with professionals, improving their quality, and being able to increase students' self-confidence. (Kemdikbud, 2023).

On the other hand, alums of MAN 1 Garut and MAN 3 Tasikmalaya City have played a role and contributed and given color to the life of the community. The madrasah can empower alums in providing various contributions such as improving quality, facilities, and infrastructure, providing scholarships to students who excel and those who are economically disadvantaged, and connecting the madrasah with various parties who can contribute to developing educational institutions to be more advanced in the future (Prihatin, 2012).

In terms of implementation, in facing the industrial era 4.0, the vocational learning model in Madrasah Aliyah should be directed at the Teaching Factory Learning Model. The Teaching Factory is a learning model focused on production or service that encompasses the standards and procedures relevant to the industrial sector and is implemented like the atmosphere that occurs in the industry (Kemdikbud, 2023). This can also be seen from one of the indicators of the vision of a quality madrasah that is being developed by MAN 1 Garut, namely "optimal learning of skills programs with a semi-blocking schedule and teaching factory pilots" (MAN 1 Garut Strategic Plan 2020). Through the teaching factory model, the educational experience is based on a replica of developments in the industrial world. In contrast, the industry, based on a spirit of cooperation, strongly supports this concept and provides various facilities as partners (Hidayat, 2011). This is in line with what Arfin said: In facing globalization, appropriate education is education that is oriented toward the industrial world, with learning supported by an appropriate curriculum (Arifin, 2019).

However, as a vocational-based Madrasah Aliyah Skills, MAN 1 Garut and MAN 3 Tasikmalaya City have not implemented Work Based Learning. What is meant by Work-Based Learning (WBL) is learning that describes where schools, companies, or organizations jointly design learning in the workplace so that this program is in accordance with student needs and can contribute to developing the company (Komariyah, 2019). Meanwhile, what is running is that madrasahs, with input from the Madrasah Committee, design various programs that will be run. The goal of WBL learning is to integrate educational experiences within schools closer to work in the business and industrial world. Some strategies that are carried out include bringing in teachers from

the business and industrial world, interviews by companies, tours to several industries, on-the-job training, and competitive employment. Work Based Learning as work-oriented learning is expected to train independence, training in problem-solving, application of knowledge, and self-confidence, and can motivate students to continue learning.

What is interesting is that the strategy implemented in this Madrasah Aliyah is an effort by the madrasah to integrate academic skills, vocational skills, and Islamic education itself. The vocational education that is held is intended to provide an answer to the community that graduates of Madrasah Aliyah Plus Skills can exist in society by penetrating several interests, namely continuing their studies, working, becoming entrepreneurs, or even having the opportunity to establish their businesses without forgetting their identity as madrasah students who uphold Islamic morals and religious character. Moreover, this output certainly differs from graduates of other schools, such as public high schools or vocational schools, which, in terms of curriculum content, are very different from Madrasah Aliyah, especially the content of Islamic Religious Education.

Madrasah Aliyah, as a general educational institution with Islamic characteristics, emphasizes that its graduates should have characters that reflect their personalities as Muslims. Madrasah Aliyah graduates are oriented to have noble morals and strong spiritual and religious strength. This is in line with what is stated in the National Education System so that students actively develop their potential to have spiritual and religious strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, nation, and state. However, several existing strategies still contain many weaknesses, especially in strengthening entrepreneurship education. This is proven by the fact that few graduates are still interested in becoming entrepreneurs. Data on graduates who work as entrepreneurs shows only 14.7%. In other aspects, several skills education taught are dominated by general skills, not accommodating skills education with Islamic religious nuances, even though this is a characteristic of Madrasah Aliyah as an Islamic educational institution. Some of these skills can be taught, such as preaching skills, calligraphy, Islamic story makers, or other Islamic content.

This article strengthens the opinion of Brodin (1982), Hamelaou (2018), Anwar (2015), Siswaya (2009), Wardiman Djojonegoro (2016), and Ibrahim (2016), who stated that Vocational education is designed to equip students with the skills needed for employment after they graduate, they have an independent attitude and can face various problems they face, especially in global life. This article disagrees with Paulo Freire (2000), who said that education tends to train students to work, has a colonial style, and can hinder creativity. Wilardjo (2010) stated that education today is more oriented towards producing graduates who serve only the interests of capital; Darmaningtyas (2014) stated that education in Indonesia is heavily contaminated by the ideology of the free market and capitalism; and Precalya stated that the concept of link and match in vocational education in Indonesia was created to support liberal education.

## Conclusion

The results of the study concluded that the strategy for strengthening vocational education in Madrasah Aliyah in responding to the obstacles presented by Industry 4.0 was carried out by, first, the vocational education curriculum was oriented to answer four interests, namely the interests of students, society, The realm of business and industry and the priorities of Islamic education; Second, the school culture that developed in Madrasah Aliyah was more oriented towards developing an Islamic school culture that revolved around intracurricular and extracurricular activities; and Third, The

collaboration established by Madrasah Aliyah with the Business World and Industry enables its graduates to have a connection and alignment with the Business World and Industry. The vocational education curriculum at Madrasah Aliyah Plus Skills was designed by integrating academic subject groups and vocational subject groups. Therefore, the implementation of vocational education by organizing several skills education at Madrasah Aliyah is the right choice, considering that Madrasah Aliyah graduates are faced with demands for competencies that must be possessed in the current global era, especially the demands of the world of work. This study has limitations because it only involves several madrasahs, has not touched on their broader dissemination aspects, and has not been able to present variations of vocational education models that exist in several Madrasah Aliyah. This study recommends the importance of preparing Madrasah students' competencies to be ready to face the challenges of the world of work in the Industrial Revolution 4.0 era by equipping students with entrepreneurship skills. In addition, policies need to be made so that the implementation of skills education does not only organize several general skills education such as Automotive Light Vehicle Engineering, Motorcycle Engineering and Business, Network Computer Engineering, Power Electronics and Communication Engineering, Fashion Design, and Barista but also as Madrasah Aliyah needs to maintain its Islamic identity by organizing Religious Skills Education such as Da'wah Skills with digital media, Calligraphy skills, Skills in Creating Islamic Story content and other Islamic content.

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