Improving School Experience Through Design Thinking

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Abstract. Changes and uncertainties have become the highlight of everyone's life in the 21st century. It is unavoidable that agility becomes the survival kit, specifically in how society, economics, technology, and job requirements have been going. Thus, education must respond by providing services and upgrading their outcome learning to match today's labor market. Prior to the emergence of COVID-19, Madrasah, as an Islamic School regulated under The Ministry of Religion of Indonesia, was facing many challenges. Through the case study as methodology, this paper chooses two Madrasah (Islamic schools), namely SMK Ma'arif 3 Kebumen and MAN 2 Cianjur, which have had various achievements by producing student work that is relevant to products in today's digital era as research object to observe how complex challenges are faced. This paper uses a design thinking approach to understand how all the challenges meet the solution. This paper presents the challenges and alternative solutions of research objects in improving schools to remain relevant to the current world. The result shows that both schools have high achievement in improving school experiences in terms of four improvement sectors with key strategic ways such as foreign language programs, teachers support, project-based examination policy, and third party involvement.

Keywords: COVID-19 · Madrasah · Design Thinking · School Experience

1 Introduction

According to Law Number 20 of 2003 concerning the National Education System, Article 3 states that national education functions to develop capabilities and shape the character and civilization of a dignified nation in the context of the nation's intellectual life. Therefore, one of the main functions of education is to change lives for the better.

Madrasah is one of the Islamic educational institutions with a noble goal to prepare a new generation of Muslims who excel in morals, charity, and science. Institutionally, Madrasah is an educational institution under the auspices of the Ministry of Religion, particularly the Directorate of Islamic Education. (Directorate of Islamic Education, Ministry of Religion of Indonesia).

The government has made various attempts to find solutions regarding the education system to promote and improve the quality of education. Efforts to improve the quality of education are carried out through various approaches, both institutional and empowering

human resources. Since the reformation and the enactment of the Laws of the Republic of Indonesia, such as Republic of Indonesia Law No. 22/1999 concerning Regional Government, RI Law No. 25/1999 concerning the financial balance between the center and the regions, now revised with RI Laws 32 and 33 2004 concerning Regional Autonomy. The law changed some central government regulations from centralized to decentralized, especially those related to education policy, to empower education in the regions [5].

One of the critical policy breakthroughs to improve Madrasah lies in the National Education System Law No. 20/2003; through this law, Madrasah is recognized by the government as public schools with Islamic characteristics organized by the Ministry of Religion. For example, in article 18, paragraph 3, it is stated that Madrasah Ibtidaiyah (MI) as the similarity to elementary school, Madrasah Tsanawiyah (MTs) as the similarity to junior high school, and Madrasah Aliyah (MA) the similarity to Senior High School (SMA), Madrasah Aliyah Vocational (MAK) the similarity of vocational high school (SMK), Through this law, both Madrasah and public schools have the same policy [4].

As an adaptation to changes in the industrial world, several breakthroughs have been made. Entering the industry in 2000, the government enforced the 1998 curriculum on the link and match concept. This means that vocational education programs, processes, and outcomes of vocational education are more in line with the needs of the business and industrial world. Change in orientation in the management of vocational education which includes 10 points, including changes from supply-driven to demand-driven, competency-based program development, eliminating barriers that separate schools and the business/industry world, initiating a multi-entry-exit system and competency certification, and promoting the Production Unit.

Vocational education continues to adapt to the existing changes. Entering 2020, Vocational Education through the "Vocational Education Towards 2020" plan is much more flexible. Vocational High School is no longer just a Vocational Education but also Education and Training. This marks the formation of a competency-based education curriculum.

1.1   21st Century Human Capital Landscape

According to the World Economic Forum's reports, companies will transform tasks, jobs, and skills by 2025. Forty-three percent of businesses surveyed indicate that they are set to reduce their workforce due to technology integration, 41% plan to expand their use of contractors for task-specialized work, and 34% plan to expand their workforce due to technology integration.

In the same report, employers expect that by 2025, increasingly redundant roles will decline from being 15.4% of the workforce to 9% (6.4% decline) and that emerging professions will grow from 7.8% to 13.5% (5.7% growth) of the total employee base of company respondents. It estimates that by 2025, 85 million jobs may be displaced by a shift in the division of labor between humans and machines, while 97 million new roles may emerge that are more adapted to the new division of labor between humans, machines, and algorithms. From this phenomenon, there is a skill gap. On average, companies estimate that about 40% of workers will require retraining of six months or
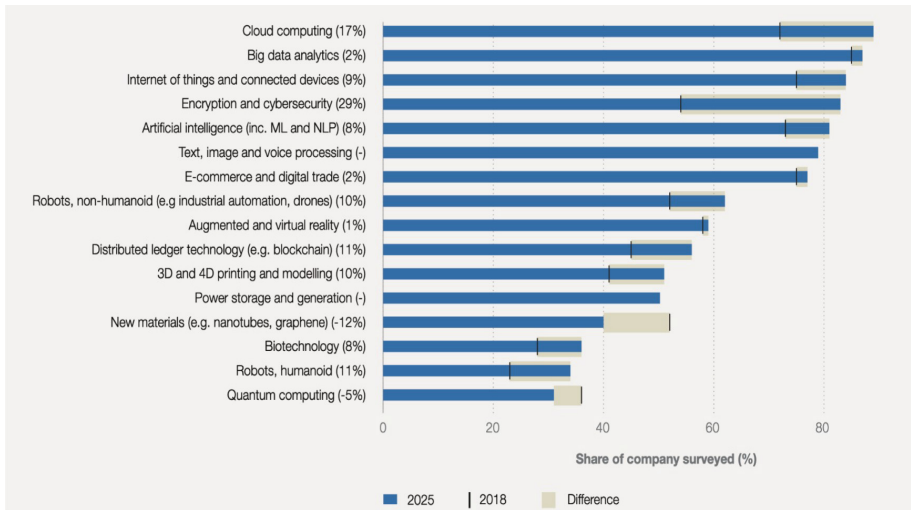
Fig. 1. World Economic Forum Report 2021

less, and 94% of business leaders report that they expect employees to pick up new skills on the job, a sharp increase from 65% in 2018 [2].

The next question is probably, what will be the upcoming job that might appear tomorrow? Data from Forum's Future of Jobs Survey shows that jobs of tomorrow related to the adoption of new technologies among the companies surveyed. Figure 1 presents a selection of technologies organized according to companies' likelihood of adopting them by 2025. Cloud computing, big data, and e-commerce remain high priorities, following a trend established in previous years.

Therefore, madrasah as one of the educational institutions must look for the most strategic ways to equip students with present skills which are related to the 21st Century Human Capital Landscape.

The problem of currently learning methods, which is online, worsen the student skills development agenda. Online Learning is carried out through a platform which can bring together teachers and students. However, it obviously poses challenges for both teachers and students. The quality of the online learning process is not entirely related to the abilities and skills of teachers, but also on the involvement and commitment of students and their technical competencies. The impact of online learning as compared to face-to-face teaching and learning has been researched, and studies show that students experience loss of concentration and lower performances [1]. A solution is needed on how learning should be carried out safely without sacrificing the quality of learning.

1.2 Shifting in Learning Method

Through the Design Thinking Process, this paper aims to answers the following research questions:

a. What Challenges experienced by Madrasah in Adapting to 21st Century Human Capital Landscape?
b. How to equip students with industrial skills in adapting to 21st Century Human Capital Landscape?

The Objective of this research are:

a. Understanding the challenges experienced by Madrasah in Adapting to 21st Century Human Capital Landscape?
b. Understanding the strategy of Madrasah in equipping students with industrial skills in adapting to 21st Century Human Capital Landscape?

2 Literature Review

2.1 Madrasah as Islamic Educational Institution

As an educational institution, madrasah always has challenges to adapt to changes that occur in society. Hence, madrasah must be dynamic to adapt to every change in society. In terms of preparing students for entry and competition in the labor market, Education also has the function of developing potential skills and personality. In order to improve national education, the Indonesian government implemented Law Number 20, 2003 concerning the National Education System as a manifestation of the discourse on education decentralization in the context of regional autonomy. Madrasah-based management (MBM) is an effort to involve many lines of authority in decision making such as responsibility or accountability for the frequency of decisions taken [5].

MBM is a concept that offers autonomy to schools to determine school policies in order to improve the quality, efficiency and equity of education in order to accommodate the wishes of local communities and establish close cooperation between schools, communities and governments. Whereas the main purpose of MBM is to improve the efficiency, quality and equity of education. What is meant by increased efficiency is obtained through the freedom to manage existing resources, community participation, and simplification of the bureaucracy. Quality improvement is obtained through parental participation, flexibility in madrasah management, improvement of teacher professionalism and other things that can foster a conducive atmosphere. While the distribution of education can be seen in the growth of community participation, especially those who are capable and caring, while those who are less capable will be the responsibility of the government [6].

The government has also conducted efforts to improve the quality of teachers through Law No. 14 of 2005 requiring educators to have professional qualifications of at least S1/equivalent. In addition, educators must also have a minimum of integrated competence (pedagogic, personality, social and professional). All educators at the Madrasah Ibtidaiyah (MI)/equivalent level must have these qualifications. The role of educators is very large in improving the quality of graduates through a variety of creativity in carrying out learning activities, such as making interesting media, fun methods, extracting material from various learning sources, and others [7].
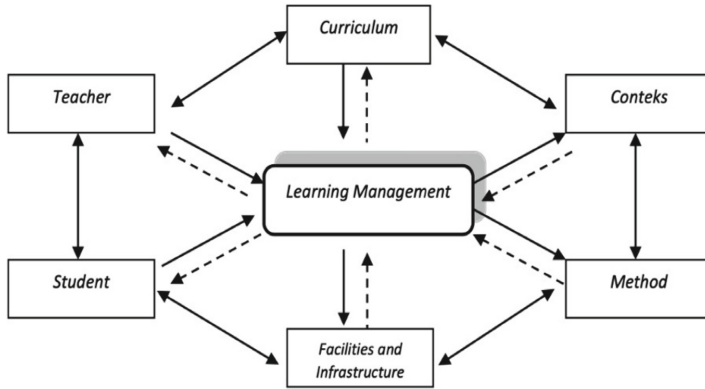
Fig. 2. Interactive Relationship of learning management. Source: adopted from Sofanudin, A., Rokhman, F., Wasino, W., & Rusdarti (2016)

Relating with the need and the change for industrial revolution 4.0, Since the last few decades, the madrasah significantly has shown significant progress in improving the quality of education by creating new ideas in the field of management of Islamic education in general, including improving learning through learning management innovations i.e. innovation in branding the madrasah education, innovation in welcoming students, innovation in curriculum, and innovation in learning [8].

Improving the quality of education cannot be separated from learning management, in order to optimize learning activities in classrooms as well as achieve learning objectives. In other words, managing the learning environment is not an easy task to do, therefore, teachers must be able to understand the implementation of good learning management which is in line with the intended goals. In addition, the learning components should cooperate with each other to result in a qualified learning process. Dialogically the interactive relationships of these components can be described as following.

This Fig. 2, is illustrates the importance of student learning needs complex learning support [9]. In terms of developing madrasah, all the factors must be considered to maximize the result of student learning activities.

2.2 Education Shifting Trend in 21st Century

Today's Education model was largely influenced by the needs of the first and second industrial revolutions. When manpower is needed to fill repeatable and process-oriented tasks in early manufacturing. Meanwhile, the third and fourth industrial revolutions introduced automated production and value creation products that operated by global teamwork. Hence, new skills such as personal and interpersonal skills are needed to work collaboratively with a worldwide team. And the framework or the new model of education is needed to prepare children to be ready for a new profession that does not exist yet today.

2.3 Shifting in Content Learning

As globalization and the rapid development of technology continuously transform society and the human capital landscape, education needs to transform in line with the changing needs of the global economy and society. Primary and secondary school systems have a critical role to respond to the changing of jobs in the future by preparing a new personal skill of global citizens and the future of the workforce. A new model of education is urgently needed to equip and foster children with a new skill of the future.

3 Research Methods

3.1 Design Thinking in Education

This paper aims to address the challenge of Improving school experience using Design Thinking as an approach and the process of gathering information that involves users. According to Stanford's D School [3], "design thinking is a methodology for creative problem solving". A "human-centered "open" problem-solving process is used to solve the real-world. Design thinking can have a positive influence on 21st-century education across disciplines because it involves creative thinking in solving complex problems.

Thus, it is useful in developing the needed skills (communication, teamwork, creativity, critical thinking/problem solving) to succeed in this interconnected, digital world we live in because it enhances students" problem-solving skills [10].

Design thinking comprises a variety of creative strategies for stewarding projects with multiple stakeholders or fostering organizational innovation: "It helps deal with ambiguities and articulate the right questions, as well as identify and formulate possibilities and potentials" [11].

Through Design Thinking the right questions are being addressed because it allows people to understand the real problem that occurs. Here in this paper researchers try to collect data from schools through an interview, which are Madrasah where they could run the school based on the regulation from the Ministry of Religion of Indonesia whereas other schools run based on the regulation from The Ministry of Education of Indonesia. The situation and conditions that arise in Madrasah are different compared to other schools.

Both the schools that are under the regulation of The Ministry of Education and The Ministry of Religion have to deal with the Industrial Revolution 4.0 where their graduates later need to be able to get along with. In consequence, the school needs to add more skill to help graduates in better roles clarity and performance in organization [12]. Therefore researchers use the design thinking process in this research as below to understand the point of view of school (Fig. 3).

Research objects in this research are:

a. SMK Maarif 3 Kebumen

SMK Maarif 3 Kebumen is one of the vocational schools under Pesantren (boarding school) where in boarding school all the students are living in the school. They run the learning and teaching process for 24 h, 7 days as a boarding school.
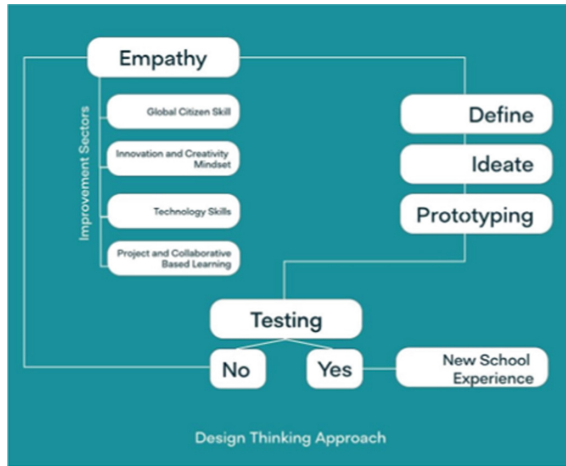
Fig. 3. Design Thinking Approach. Source: Researcher (2022)

b. Madrasah Aliyah Negeri 2 Cianjur

Madrasah Aliyah Negeri 2 Cianjur is under the supervision of the education office within the ministry of religion. Researchers chose these two schools because both of these schools have succeeded making an innovation based on the needs of the local community where the school was established. Kebumen is the melinjo producing area and SMK Maarif 3 Kebumen managed to make a melinjo peeling machine for the people. Madrasah Aliyah Negeri 2 located in Cianjur and Cianjur is known as an industrial city and the school developed the skill of the students to be ready entering the industry.

Researchers see in qualitative research the area of working is in the context of discovery where it is more open-ended and often follows emergent empirical and conceptual findings in unexpected ways (Adler & Adler) [13]. Therefore, researchers do the interviews as an open ended to collect all the information and findings from the school committee who is incharge of making the road map and implement the regulation that the school gets from the Ministry of Religion. Researchers gather the information by making focus group discussions with all the committee members all at the same time. The purpose of doing the interview as a focus group is to have an immediate cross check. Researchers do the focus group discussion in a timely manner between SMK Ma'arif 3 Kebumen and Madrasah Aliyah Negeri 2 Cianjur.

The focus group was conducted by the two researchers through online meetings via Zoom. It occurred for 2 h for each school and the researchers led the conversation with an open-ended question. Every committee member of the school has unlimited time in delivering their opinion and data regarding the school experience and anything related to that. Researchers are also able to re-check and ask for more data to school because the schools are very open with this research.

Researchers gathered and transcripted all the information that we got from the school. Following that researchers made the code based on the design thinking approach. We analyzed the data and interpreted it to each part of the design thinking process. To finalize

it we combine all the information that we have coding with the literature review also with some regulation from the Ministry of Religion.

4 Discussion

There are four design thinking processes in order to solve problems and find solutions.

4.1 Empathy

Empathy is the foundation of the whole design thinking process. Using a beginner's mindset and immersing yourself in the user's experience is a great way to uncover deep needs and insights. To end up with a novel and innovative solution, the team needs to deeply understand from many perspectives. For instance, In 2004, IDEO as a design studio firm was given the challenge by Bank of America to find novel ways to entice people to open accounts. The bank was hoping that IDEO's human-centered, ethnographic-based approach to design would bring innovation to an industry that's typically very conservative and reluctant to change. To accomplish this, IDEO embedded themselves into the Bank of America team and conducted observations in several cities across America. They spoke to families and individuals, learning about spending and banking habits [10].

4.2 Define

From the empathy process the team design collected the story and insight from users, while in the defined process, the team design understood the problem and synthesized the findings and came up with the problem statement or called point of view. There are three elements of point of view namely who are your users, what their deep unmet needs, and why is this insightful.

4.3 Ideate

Ideate is where the team design and important party conduct an ideation session or brainstorming to find innovative solutions. The term "brainstorm" was popularized by the ad agency executive Alex Osborn in his 1953 book Applied Imagination (though he had outlined his method in a 1948 book, Your Creative Power). Osborn created two rules for a successful brainstorming, defer judgment and reach quality. Deferring judgement reduced social inhibitions in the group—no one would be stigmatized for shouting out a crazy idea. By reaching for quantity, participants would boost their overall creative output and increase the likelihood of coming up with innovative solutions

4.4 Prototyping

Prototyping is a stage of design thinking where designers create something tangible that can be tested to real users. A good prototype is a prototype that facilitates answering the questions you have [10]. In many cases, prototypes are built with the goal to get early user feedback sooner and cheaper.

4.5   Testing

Testing is a stage where prototypes are tested to representative users to get feedback. The testing stage enables designers to see where the prototype works well and where it needs improving. Based on user feedback, designers can make changes and improvements.

Through a design thinking approach, this paper observes the schools. SMK Maarif 3 Kebumen is a private vocational high school under Al-Kahfi Islamic Boarding School (Pesantren). Madrasah Aliyah Negeri 2 Cianjur is a public high school under the Ministry of Religion of Indonesia. There are four improvement sectors recommended by the World Economic Forum report, the school is supposed to improve to prepare the students relating to the current human capital landscape.

The following is the framework of how a design thinking approach is used by SMK Maarif 3 Kebumen and Madrasah Aliyah Negeri 2 Cianjur to improve the school experiences.

4.6   Design Thinking in SMK Ma'arif 3 Kebumen

4.6.1   Empathy

Empathy is the foundation of the whole design thinking process. Using a beginner's mindset and immersing yourself in the user's experience is a great way to uncover deep needs and insights [3].

In terms of the global citizen skill sector, the school considers the urgency of those skills. The school has a high commitment to improve the capability of teachers to develop foreign language skills. Located in small towns, where the chance to speak with native speakers is almost zero, considered by school management to carry out various strategies to achieve maximum learning outcomes.

In terms of the innovation and creativity mindset sector, there are several lack of resources in teacher capabilities, facilities and networks. These limitations force school stakeholders to take strategic steps in utilizing their resources and involving various parties. In these terms, the schools refer to local problems and the character of industry and natural resources. SMK Maarif 3 consider that located in Kebumen dominantly as the agricultural city, this is taken into consideration in developing the invasion product.

In terms of technology skills, both schools have fully recognized the importance of equipping students with technology skills. Changes in skill needs in the recent industrial world are a consideration for schools to remapping the developed technology curriculum.

In terms of project and collaborative based learning, both schools have different challenges, SMK Maarif 3 is facing a very serious problem. Due to being under a pesantren organization, the students have a very dense learning load. After school, the students have to still follow the pesantren learning activities until late at night. The teachers considered it needed extra effort cause the students' energy was very drained.

4.6.2   Define

Define phase is a step where team design collects the data and insight through empathy process and summarizes with point of view. In terms of global citizen skills, based on observation and interview, it can conclude by the following point of view:

POV SMK Ma'arif 3:

"As a vocational school and islamic boarding school' students need international cultural environment to develop student in global citizen skills"

In terms of innovation and creativity mindset, based on observation and interview, it can conclude by the following point of view:

POV SMK Ma'arif 3:

"In developing innovation and creativity mindset must be contextualized in the agriculture field and geographical problem"

In terms of technology skill, based on observation and interview, it can conclude by the following point of view:

POV SMK Ma'arif 3:

"In developing technology skills, third parties partnership needed to develop innovation product and internship placement"

In terms of project and collaborative based learning, based on observation and interview, it can conclude by the following point of view:

POV SMK Ma'arif 3:

"In project and collaborative based learning, rely on teacher capability to reach the learning outcome"

Above point of view in four improvement sectors being the main milestone to ideate a solution in the Ideate step.

4.6.3   Ideate

Brainstorming as an ideation process has a significant impact in finding beyond solution. In this phase, SMK Ma'arif 3 Kebumen has daily, weekly and monthly teacher forums to share opinions and discuss specific cases. Through this forum, all teachers and staff share their views and ideas to solve every problem. Based on the point of view in the global citizen skills improvement sector, SMK Ma'arif 3 Kebumen implements foreign language programs and foreign student exchange programs.

Based on the point of view in the innovation and creativity mindset improvement sector, both schools consider the importance of equipping students with innovation and creativity mindset. SMK Ma'arif 3 decided to adopt a policy approach, requiring all students to create an innovation project based on local issues as a final project examination.

Based on the point of view in technology skill, SMK Ma'arif 3 implements extracurricular activities and third parties partnership. Based on the point of view project and collaborative based learning improvement sector, SMK Ma'arif 3 rely on teacher capability to have special approach techniques to maintain and control the development of students.

4.6.4   Prototype

Based on the ideation process relating to the global citizen skills improvement sector, SMK Ma'arif 3 Kebumen implements foreign language programs. Due to structurally being an Islamic boarding school organization, SMK Ma'arif 3 Kebumen runs foreign language programs to equip students with Arabic and English language programs.

SMK Maarif 3 Kebumen runs an annual intercultural exchange namely Al-Kahfi Intercultural Festival along with Al-kahfi boarding school annual ceremony. This event invites international students to join this program and learn about pesantren or islamic culture.

Based on the point of view in the innovation and creativity mindset improvement sector, through the policy of final project examination, SMK Ma'arif 3 Kebumen encourages students to develop a project based on local issues systematically. Several outstanding student projects are a belinjo peeler and an automate railroad crossing gate. Through these projects, the students are fully involved, led by a teacher and a third party expert. The belinjo peeler project chose as consideration that Kebumen city is one of the belinjo producers. Meanwhile, the automate railroad crossing gate chose as consideration that Kebumen geographically crossed by the railroad.

Based on the point of view in technology skill, SMK Ma'arif 3 Kebumen creates an annual technology bootcamp. Through this bootcamp all students are able to choose a subject based on their interest. Based on the point of view project and collaborative based learning improvement sector, both schools rely on teacher capability in maintaining and monitoring the students. SMK Ma'arif 3 Kebumen encourages all teachers to customize their approach for special students' needs.

4.6.5   Test

By testing the prototypes with real users in context, observing their reactions, and getting feedback, we can refine our POV, learn more about the users, and make the next iteration of the product that much better. As they say at Stanford's d.school, "Prototype as if you know you're right, but test as if you know you're wrong" [3]. All programs that are prototyped by the schools have impressive results and improvement notes.

In terms of the global citizen improvement sector, SMK Ma'arif 3 Kebumen needs more efforts to get an ideal result in implementing foreign language programs, the school needs native teachers and difficulties to control students in implementing foreign language speaking day programs. However, SMK Ma'arif 3 Kebumen states that successfully lifts up their students' self confidence to interact with foreigners through the Intercultural Festival Program.

In terms of the innovation and creative improvement sector, SMK Ma'arif 3 Kebumen successfully developed and tested the inventions. In addition, through the final project based examination, SMK Maarif 3 Kebumen systematically stimulated the students to develop their innovation and creativity mindset.

In terms of technology skills improvement sector, SMK Ma'arif 3 Kebumen has significant results by successfully winning several competitions. In terms of project and collaborative based learning, SMK Ma'arif 3 Kebumen states that special approach and customized learning methods are needed to maximize learning process and outcomes.

4.7   Design Thinking in Madrasah Aliyah Negeri 2 Cianjur

4.7.1   Empathy

Through researcher observation, Madrasah Aliyah Negeri 2 Cianjur has crucial capital, most of the teachers have sensitivity and high commitment as educators. The Empathy

phase seems to be conducted every day as how teachers give their energy and sympathy by witnessing daily development of students.

In terms of the global citizen skill sector, Madrasah Aliyah Negeri 2 Cianjur considers the urgency of those skills. Seems like SMK Ma'arif 3, located in small towns, the school stakeholders still continue to carry out various strategies to achieve maximum learning outcomes. Madrasah Aliyah Negeri 2 Cianjur has foreign language programs such as English, Mandarin, German and Arabic.

In terms of the innovation and creativity mindset sector, MAN 2 Cianjur, which is located in the city of Cianjur, which has an industrial area, is a consideration in developing skill programs needed by the industrial sector. MAN 2 Cianjur considers local opportunities such as Industrial area and local industry as one of consideration in developing student skills.

In terms of technology skills, MAN 2 Cianjur deeply understands the shifting recent skills in the recent industrial world. In terms of project and collaborative based learning, MAN 2 Cianjur has the challenges of developing teachers in presenting a joyful and comfortable learning environment.

Empathy connects designers to the people who will use our products, empowering us to create products that ultimately meet real human needs [3]. Through deeply understanding all insight and observation results, above facts will be clearly and concluded as a problem statement in the Define step.

4.7.2 Define

The Define phase will give us an opportunity to synthesize these findings and come up with a problem statement, called a point of view (POV), that can help you reframe the problem and open new and innovative solution spaces [3]. In terms of global citizen skills, based on observation and interview, it can conclude by the following point of view:

POV MAN 2 Cianjur:

"As a private high school students need foreign languages skill to support the next educational journey.

In terms of innovation and creativity mindset, based on observation and interview, it can conclude by the following point of view:

POV MAN 2 Cianjur:

"In developing innovation and creativity mindset must be contextualized in manufacture industrial skill"

In terms of technology skill, based on observation and interview, it can conclude by the following point of view:

POV MAN 2 Cianjur:

"In developing technology, need policy intervention to adjust portion of curriculum"

In terms of project and collaborative based learning, based on observation and interview, it can conclude by the following point of view:

POV MAN 2 Cianjur:

"In project and collaborative based learning, teacher coordination forum"

Above point of view in four improvement sectors being the main milestone to ideate a solution in the Ideate step.

4.7.3   Ideate

Brainstorming as an ideation process has a significant impact in finding beyond solution. Seems like SMK Ma'arif 3 Kebumen, the school has daily, weekly and monthly teacher forums to share opinions and discuss specific cases.

Based on the point of view in the global citizen skills improvement sector, MAN 2 Cianjur is highly concerned to equip their students in order to prepare their future capabilities. MAN 2 Cianjur provides foreign language programs and foreign student invitation programs.

Based on the point of view in the innovation and creativity mindset improvement sector, MAN 2 Cianjur provides a special curriculum namely "Kurikulum Keterampilan Plus/special curriculum plus". Through this program the students have to choose subjects based on their interest.

Based on the point of view in technology skill, MAN 2 Cianjur intervenes in curriculum allocation to push technology skills programs. Based on the point of view project and collaborative based learning improvement sector, MAN 2 Cianjur, developed a daily teacher forum to share overview and case finding before learning started.

4.7.4   Prototypes

Based on the ideation process relating to the global citizen skills improvement sector, both schools implement foreign language programs. MAN 2 Cianjur has the same program including Arabic, German and English. MAN 2 Cianjur implements foreign student invitation partnering with Korean education institutions.

Based on the point of view in the innovation and creativity mindset improvement sector, MAN 2 Cianjur invented a special curriculum namely "Kurikulum Keterampilan Plus", designed as extra courses that consist of computer and robotic classes, culinary art classes and fashion classes.

Based on the point of view in technology skill, MAN 2 Cianjur optimizes with the special curriculum, Kurikulum Keterampilan Plus, This curriculum has a 10% portion out of the total curriculum. Apart from being a program to develop students' skills in technology, this curriculum also aims to ensure students' skill standards before undertaking an internship program and readiness to enter the industrial world. Based on the point of view project and collaborative based learning improvement sector, the schools rely on teacher capability in maintaining and monitoring the students.

4.7.5   Testing

By testing the prototypes with real users in context, observing their reactions, and getting feedback, we can refine our POV, learn more about the users, and make the next iteration of the product that much better. As they say at Stanford's d.school, "Prototype as if you know you are right, but test as if you know you are wrong" [3]. All programs prototyped by the schools have impressive results and improvement notes.

In terms of the global citizen improvement sector, the foreign language program of MAN 2 Cianjur has also received impressive feedback from students. Most students are passionate about participating in every foreign language program. Unfortunately, due to

covid 19, MAN 2 Cianjur postponed the collaboration with a South Korean educational partner.

In terms of the innovation and creative improvement sector, the result has been achieved by MAN 2 Cianjur, the special curriculum able to equip students with the skills needed in the industry. As a result, the school states that companies have offered many students jobs to work in.

MAN 2 Cianjur has significant results in the technology skills improvement sector by successfully winning several competitions. In terms of this sector, the school is still in progress doing partnerships with industrial parties. The partnership's objectives include internship and job placement, a teaching factory program, and curriculum development.

In terms of project and collaborative based learning, MAN 2 Cianjur highly consider collaborating with industrial third parties and creating group project students; with these methods, most students are highly passionate about following the program.

4.8   Finding

Through the whole process researchers found many improvement results in both schools. Table 1 is summary findings.

Table 1. Summary Findings

School	Improvement Sectors	Design Process	New Experience
SMK Maarif 3	Global Citizen Skill	Foreign language program	Intercultural program
	Innovation and creativity mindset	Project based examination	Student project based on local problem
	Technology Skill	Annual tech bootcamp	Technology student club project
	Project and Collaborative based learning	Third party partnership	Teaching factory and internship placement
MAN 2 Cianjur	Global Citizen Skill	South Korean Partnership	Student exchange program
	Innovation and creativity mindset	Kurikulum Plus Keterampilan	Recognized as creative students by third parties in the internship program
	Technology Skill	Kurikulum Plus Keterampilan	Robotic student club
	Project and Collaborative based learning	Third party partnership	Internship and job placement

4.9   Theoretical Implications

Based on theoretical foundation, design thinking is an applicable method in transformation education. It guides management or team step by step to find a strategic solution. This research uses Design thinking Stanford's D School version that consists of 5 phases; Empathy, Define,

Ideate, Prototype, Testing. Due to the research using design thinking as approach observation, there are no massive implications to the theory.

4.10   Managerial Implications

According to the result, there are several differences between both schools. SMK Ma'arif 3 Kebumen, a structurally Islamic boarding school institution, highly considers that every decision must consider the impact on a load of daily learning time. After finishing school, the students follow Islamic boarding school activities until night. The key success of transforming a school into an Islamic boarding school is collaborative management to synchronize learning management between school management and Islamic boarding school management.

Meanwhile, MAN 2 Cianjur, as an independent school, has a strategic decision process. The school management has only considered the parent council in the decision process. The result shows that both schools have the same approach that the teacher role has an essential aspect of the empathy process.

4.11   Research Limitation

This research uses the design thinking process as an observation approach. And the results do not represent the whole madrasah and Islamic boarding school institutions.

5   Conclusion

The results show that both schools have relevant strategic solutions and results in four improvement sectors. However, several improvement notes include the government's role in networking schools with industrial parties and international institutions. The primary role of industrial parties is to support schools in developing relevant curricula and student internships and job placement. Meanwhile, international parties are needed to develop students in global citizen skills. In addition, a comprehensive and sustainable teacher capacity development program is needed as teachers have essential roles in improving the school experience.

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