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A Development Of Human Resource (HR) Capabilities Through Computer Graphic Design Training To Enhance Student Knowledge At Al- Farabi Integrated Vocational High School (SMK)

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ABSTRACT

This study aims to develop human resource (HR) capabilities through graphic design computer training to improve students' knowledge at Al-Farabi Integrated Vocational School. This training activity is designed as an effort to provide practical skills that are relevant to the needs of the creative industry and information technology. The method used is a quantitative and qualitative approach through observation and evaluation of training results. Training participants are given materials ranging from an introduction to graphic design software to creating creative projects based on digital design. The results of the study showed that this training significantly improved students' understanding and skills in using graphic design software such as CorelDRAW. In addition, students showed increased creativity and analytical skills in developing innovative graphic works. This training also strengthens students' competitiveness in the world of work and the relevance of the school curriculum to industry needs. Thus, developing HR capabilities through graphic design computer training is an effective strategy in improving the quality of education and career opportunities for students in the future.

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INTRODUCTION

In the era of globalization, technological skills are one of the most important competencies for vocational high school (SMK) students, which also directs students to be ready to enter the world of work.[1]. Al-Farabi Integrated Vocational School as a vocational education institution faces the challenge of preparing its students to be able to compete in the world of work, especially in fields that require graphic design skills. However, based on initial observations, students' abilities in the field of graphic design are still limited, making it difficult for them to utilize technology optimally to create valuable visual works.

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Human resource development (HRD) is a fundamental aspect in improving individual competence to face the challenges of the times. According to Sahir, Syafrida Hafni, et al. "HRD Training and Development Models." (2023), HRD development includes a series of training, education, and learning activities designed to improve individual abilities and knowledge. In this context, graphic design training in vocational schools aims to create graduates who are competent and able to compete in the digital era.[2].

This study aims to evaluate the effectiveness of graphic design training in improving students' knowledge and skills. With a focus on human resource (HR) development, this study is expected to provide new insights into the importance of integrating technology-based training in vocational high schools.

For Al-Farabi Integrated Vocational School, this training is a strategic effort to improve the quality of education. By producing competent graduates in the field of graphic design, the school can improve its reputation as an institution capable of producing qualified human resources in graphic design knowledge.

Graphic design is a branch of science that combines art and technology to convey messages through visual media. According to Meggs and Purvis (2016), graphic design includes an understanding of aesthetic principles, visual communication, and software mastery. In the world of work, graphic design has become a primary need, especially in the creative industry, digital marketing, and advertising.[3].

Technology plays a central role in graphic design education. Mastery of software such as Adobe Photoshop, CorelDRAW, and Illustrator is a mandatory requirement for a professional graphic designer. According to research conducted by Drucker (2017), the use of technology in learning not only improves students' technical skills, but also trains them to think creatively and problem solve[4].

Competency-based training is an approach designed to meet the specific needs of trainees. In graphic design training, this approach emphasizes the mastery of practical skills that are relevant to the needs of the workplace. Therefore, competency-based training can produce individuals who are more prepared and confident in applying their knowledge in the real world.[5].

Training is one of the effective ways to improve individual knowledge and skills. Based on Piaget's constructivist learning theory, training allows individuals to learn through direct experience, which helps them understand concepts more deeply. This is relevant in graphic design training, where students are taught to use design software through hands-on practice.

Graphic design-based training provides a different learning experience from traditional methods. This approach emphasizes not only theory, but also hands-on practice, allowing students to understand the real application of the concepts they learn. Furthermore, this training is expected to help teachers at Al-Farabi Integrated Vocational School to be more open to innovation in learning and better prepared to face the challenges of education in the digital era.[6]. This is in line with the vision of vocational education that is oriented towards the needs of the world of work, namely producing skilled workers is an

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important part of developing human resources to provide knowledge and skills to the community in accordance with the needs of the world of work and industry.[7].

As a vocational education institution, SMK has the responsibility to produce graduates who are ready to work. According to the National Education System Law (Law No. 20 of 2003), SMK is expected to provide education that is oriented towards practical skills. In this case, graphic design training is one of the strategic steps to achieve this goal.[8].

Several studies have shown the success of graphic design training programs in vocational schools. For example, studies have shown that project-based graphic design training can improve students' technical skills and creativity.[9]. The results of this study can be a reference in designing training programs at Al-Farabi Integrated Vocational School.

Although graphic design training offers many benefits, there are several obstacles that are often faced, such as lack of facilities, budget constraints, and low student motivation. According to research by Daryanto (2015), the success of training is highly dependent on school readiness, instructor quality, and management support.

A collaborative approach in graphic design training can help students learn more effectively. According to Vygotsky (1978), learning through social interaction can accelerate the process of internalizing knowledge. In graphic design training, students can share ideas and experiences with each other to create more innovative works.[10].

Graphic design training not only has an impact on increasing students' knowledge, but also forms a more creative, disciplined, and innovative character. Human resource development through training can create individuals who are adaptive to change, which is very necessary in a dynamic work world.[11].

METHODS

This study used a mixed method, namely combining a quantitative approach to measure the increase in students' knowledge before and after graphic design training and a qualitative approach to explore students' experiences during the training and gain insight into the impact of the training. The subjects of the study were 34 students of class XII-A majoring in TKJ (Computer Network Engineering) from Al-Farabi Integrated Vocational School located at Jl. Perjuangan No. 177, Sunggal District, Deli Serdang Regency.

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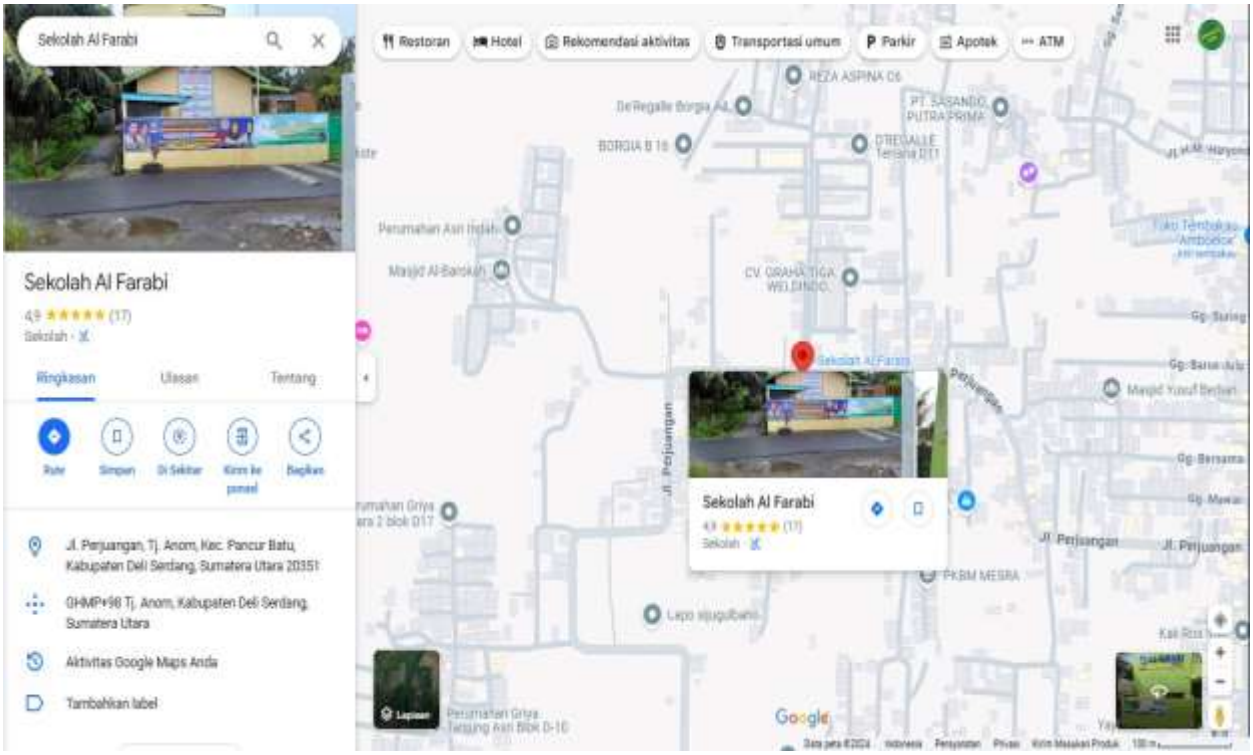

Source :https://maps.app.goo.gl/zxUMqXztdjXb4mu17

Figure 1. Al-Farabi Integrated Vocational School Map Location

To obtain valid and comprehensive data, several data collection techniques are used:

1. The written test consists of multiple choice tests and short essays to measure students' abilities in graphic design.
2. Observations were made during the training to see the level of student participation and enthusiasm, including activeness, interaction and ability to complete graphic design tasks.
3. Documentation in the form of photos and videos during the training.

In this study, the method used is designed to develop human resources through graphic design computer training in improving students' knowledge at Al-Farabi Integrated Vocational School. Here are the details of the steps:

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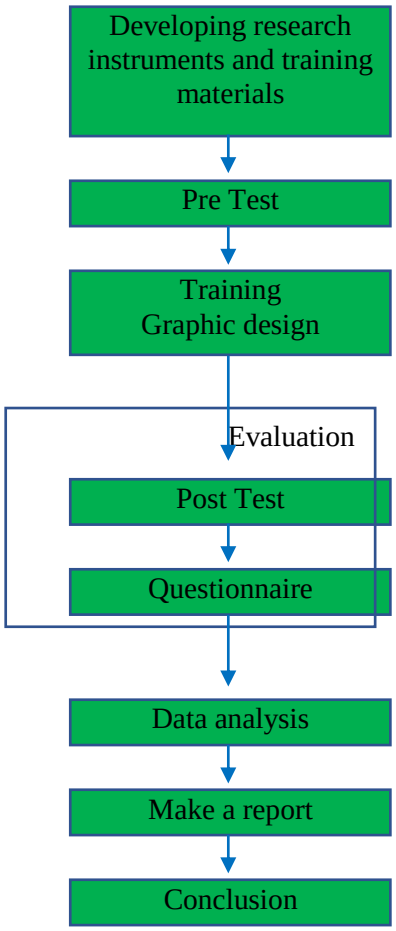

Figure 1. Research Procedure

RESULTS AND DISCUSSION

At this point focuses on the presentation of research findings based on data that has been collected and analyzed. The research results will be divided into two main parts, namely the results of quantitative analysis (from pre-test and post-test) and the results of qualitative analysis, namely observation and documentation.

Description of Quantitative Findings

Quantitative results show the increase in students' knowledge before and after training based on pre-test and post-test scores. The following are the results of the students' pre-test and post-test.

Table 1. A Pre-Test and Post-Test Results

b	Student Name	Pre-Test Score (%)	Post-Test Score (%)
1	Mr. Alfiansyah	70%	90%
2	Tania Amelia	80%	100%
3	Lucky Hamida An-Najwa	60%	80%
4	Iva Azlina Hasan	70%	90%
5	Selpa Redina	80%	100%

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b	Student Name	Pre-Test Score (%)	Post-Test Score (%)
6	English	90%	100%
7	The Beauty of Nurul Faidah	70%	90%
8	The Light of Aprilia's Grace	60%	80%
9	English: Rehan Ardiansyah	80%	100%
10	Az Zahra Putry	90%	100%
11	Tasya Aulia	70%	90%
12	Juria Said Nur Sahira	60%	80%
13	The Great Satrya	80%	100%
14	The Story of Nabila Khairunisah Harahap	70%	90%
15	Mauza Oktora Ginta	50%	80%
16	Micky Dwi Sepmi	60%	90%
17	Jihan Fauzirizqi S.	80%	100%
18	Princess Rahmadina	70%	90%
19	Ramadhania Dyah Khasanah	80%	100%
20	Shelly Septriasa	70%	90%
21	Farisa Nashan	90%	100%
22	M. Irsyad Abbas	80%	100%
23	Dimas Pramudia Ramadhan	70%	90%
24	Kumalasaribidari	60%	80%
25	Ayu Diah Suwandi	80%	100%
26	Beautiful Affiliate	90%	100%
27	Emily	80%	100%
28	Ica Zaskiarani	70%	90%
29	The Name of Sintiya Sari	60%	80%
30	Chaca Adinda Putri	80%	100%
31	Siti Komariah	70%	90%
32	English: Febriani Natasyah Utami	80%	100%
33	Dahlia the Spoiled Princess	90%	100%
34	Cathlin Syifa Arriella	70%	90%

From the table above, the following graph can be made:

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Figure 2 Pre-Test and Post-Test Graphs

From these data, we can analyze that;

$$Nilai\ rata-rata\ PreTest = \frac{total\ skor\ PreTest}{Jumlah\ Siswa} = \frac{2410}{34} \approx 70{,}88\%$$

$$Nilai\ rata-rata\ PostTest = \frac{total\ skor\ PostTest}{Jumlah\ Siswa} = \frac{3190}{34} \approx 93{,}83\%$$

$$Peningkatan = Nilai\ PreTest - Nilai\ PostTest = 93{,}82\% - 70{,}88\% \approx 22{,}94\%$$

Statistical Test

Paired t-test is one of the hypothesis testing methods where the data used are not free (paired). The most common characteristics found in paired cases are that one individual (research object) receives 2 different treatments. Even though using the same individual, researchers still obtain 2 types of sample data, namely data from the first treatment and data from the second treatment.[12]. The steps to carry out this method are;

1) Calculating the difference between Pre-Test and Post-Test.The hypothesis of this case can be written:

$$H_0 = \mu_1 - \mu_2 \neq 0$$
$$H_1 = \mu_1 - \mu_2 \neq 0$$

Ha means that the actual difference between the two means is not equal to zero.

Table 2 Difference between Pre-Test and Post-Test values

No	Student Name	Pre-Test Score (%)	Post-Test Score (%)	Difference
1	Mr. Alfiansyah	70%	90%	20%
2	Tania Amelia	80%	100%	20%
3	Lucky Hamida An-Najwa	60%	80%	20%
4	Iva Azlina Hasan	70%	90%	20%

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No	Student Name	Pre-Test Score (%)	Post-Test Score (%)	Difference
5	Selpa Redina	80%	100%	20%
6	English	90%	100%	10%
7	The Beauty of Nurul Faidah	70%	90%	20%
8	The Light of Aprilia's Grace	60%	80%	20%
9	English: Rehan Ardiansyah	80%	100%	20%
10	Az Zahra Putry	90%	100%	10%
11	Tasya Aulia	70%	90%	20%
12	Juria Said Nur Sahira	60%	80%	20%
13	The Great Satrya	80%	100%	20%
14	The Story of Nabila Khairunisah Harahap	70%	90%	20%
15	Mauza Oktora Ginta	50%	80%	30%
16	Micky Dwi Sepmi	60%	90%	30%
17	Jihan Fauzirizqi S.	80%	100%	20%
18	Princess Rahmadina	70%	90%	20%
19	Ramadhania Dyah Khasanah	80%	100%	20%
20	Shelly Septriasa	70%	90%	20%
21	Farisa Nashan	90%	100%	10%
22	M. Irsyad Abbas	80%	100%	20%
23	Dimas Pramudia Ramadhan	70%	90%	20%
24	Kumalasaribidari	60%	80%	20%
25	Ayu Diah Suwandi	80%	100%	20%
26	Beautiful Affiliate	90%	100%	10%
27	Emily	80%	100%	20%
28	Ica Zaskiarani	70%	90%	20%
29	The Name of Sintiya Sari	60%	80%	20%
30	Chaca Adinda Putri	80%	100%	20%
31	Siti Komariah	70%	90%	20%
32	English: Febriani Natasyah Utami	80%	100%	20%
33	Dahlia the Spoiled Princess	90%	100%	10%
34	Cathlin Syifa Arriella	70%	90%	20%

2) Calculating the average difference () which can be calculated using the formula: $\bar{d}$

d= i=1n $d$$i$

d= 650$34$=19.12

3) Calculating the standard deviation of differences (Sd) which can be calculated using the formula:

$S$$d$= i=1n $d$$i$− $d$$2$$n$−1

$S$$d$= 26,29$33$= 0.796=0.892

4) Calculating the t-Statistic value which can be calculated using the formula:

t= d $S$$d$/ n

t= 19.12$0.892$/ 34= 19.12$0.153$=124.89

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5) Calculating the P-Value using the t-distribution with degrees of freedom (df = n-1 = 34-1 = 33).

From the t-distribution, with a t-statistic value of 124.89 and degrees of freedom of 33, the p-value will be very small, much smaller than 0.05, which means there is a very significant increase between the Pre-Test and Post-Test.

Qualitative Findings Description

Qualitative results were analyzed to explore student experiences, effectiveness of training methods, and other impacts. These data were obtained through observation and documentation. During the training, students demonstratedactive participation. As many as 85% of students were able to complete the graphic design task of creating a simple food menu design using CorelDraw. And also, from several photos and video documentation, it shows that several design works were successfully completed with quite good quality.

Table 3 Observation Results and Documentation Table

Indicator	Percentage of Students	Information
Active participation	85%	Students actively ask questions and discuss.
Ability to complete tasks	90%	Most of them completed the task on time.
Mastery of software tools	80%	Students understand basic design tools.
Creativity	90%	Students can make posters of various food menus.

Interpretation of Results

From the results of the data analysis above, it was found that the average pre-test score of only 70.88% indicated that students had limited understanding of graphic design, especially in the CorelDraw application before carrying out the training. After the training, the average score increased to 93.83%, which indicated the success of the training in improving students' knowledge. And alsoobservations during the training indicated that the practical approach motivated students to learn more actively.

CONCLUSION

The development of Human Resource (HR) capabilities through computer graphic design training at Al-Farabi Integrated Vocational High School (SMK) has proven to be an effective strategy for enhancing student knowledge and skills. This training provides students with practical and technical expertise in graphic design, preparing them to meet industry demands and adapt to the evolving digital landscape. The program's implementation has shown significant improvements in students' understanding of graphic design principles, creativity, and proficiency in using relevant software. Moreover, the training fosters critical thinking and problem-solving abilities, equipping students with essential competencies for

future career opportunities. Overall, the initiative demonstrates that structured and skill-focused training can bridge the gap between academic learning and professional readiness, contributing to the holistic development of students at vocational high schools. Continued efforts and expansions of such programs are recommended to ensure long-term benefits for both students and the broader workforce. After conducting several steps in the research above and also obtained the results, this study shows that this training significantly improves students' understanding and skills in using graphic design software such as CorelDRAW. In addition, students show increased creativity in developing innovative graphic works. This training also strengthens students' competitiveness in the world of work and the relevance of the school curriculum to industry needs.

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