RESEARCH
www.commprac.com
ISSN 1462 2815

DEVELOPMENT OF INNOVATIVE MODEL SOFT SKILLS IN VOCATIONAL HIGHER EDUCATION CASE STUDY IN REPUBLIC OF INDONESIA

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DOI: 10.5281/zenodo.11365271

Abstract

Aim: Vocational education has a strategic role in preparing graduates to enter the world of work, therefore learning focuses on mastering the skills needed in the world of work. The development of hard skills has become a top priority in the vocational education curriculum, but the importance of hard skills should not override the crucial role of soft skills in graduates' success in the world of work. Soft skills are an important aspect of the success of workers in their professional careers. This research aims to produce a soft skills management model that is suitable for implementation in vocational higher education. **Methods and Materials:** This research is a type of R & D (Research and Development) research using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) development model. The data obtained in this study are qualitative and quantitative. The validity and reliability test results showed that the soft skills management model was declared valid and reliable. . **Results:** The validity test is 1.00. Furthermore, the reliability test is r = 0.84, so the soft skills management model is in the 'good' category. **Conclusion:** Good soft skills development management will help vocational universities prepare their graduates to become technically competent individuals with superior character.

Keywords: ADDIE, Education, Research & Development, Soft Skills, Vocational Universities.

INTRODUCTION

Vocational education has a strategic role in preparing graduates to enter the world of work; therefore, learning focuses on mastering the skills needed (M. Munir et al., 2022; Setiawan & Hudha, 2021). Rapid technological changes in the industrial era 4.0 require mastery of hard and soft skills for vocational education graduates (Hong & Ma, 2020; Kamaludin et al., 2022; Kuregyan & Khusainova, 2022). Hard skills, such as technical skills, remain essential in preparing graduates to become a qualified workforce (de Villiers, 2010; Manzoor et al., 2018; Setiawan & Purnomo, 2019; Yoga et al., 2024). A solid foundation for career success is an in-depth knowledge of technology, production processes, and specific skills. However, while hard skills remain essential, Industry 4.0 also emphasizes the need for soft skills (Lyu & Liu, 2021; Woods et al., 2022). Communication, collaboration, leadership, problem-solving, and creativity skills are critical elements in facing challenges in the industrial era 4.0 (Lee et al., 2019; Mardis et al., 2018; F. Munir, 2021; Olšanová et al., 2022; Ritter et al., 2018). In a turbulent and changing environment, vocational education graduates must have the ability to collaborate, adapt, and innovate (Fraser et al., 2019; Schwendimann et al., 2018). Soft skills serve as an essential link between technical skills and professional achievement, ensuring that workers have not only technical competence

but also the ability to collaborate efficiently in teams, solve problems, and effectively interact with the various individuals involved in a project (Cillo et al., 2019; Loup et al., 2019; Marandi et al., 2019; F. Munir, 2021; Puccio et al., 2022).

The importance of hard and soft skills for vocational education graduates not only produces graduates who are ready to work but also fulfills the demands of industrial society 4.0, which requires adaptability, speed, and the ability to learn continuously (González-Pérez & Ramírez-Montoya, 2022; Kipper et al., 2021; Ra et al., 2019). Comprehensively combining these capabilities will contribute significantly to developing a workforce that can compete and innovate effectively in an era characterized by rapid and continuous change (Hendarman & Cantner, 2018). The development of hard skills has become a top priority in the vocational education curriculum, but the importance of hard skills should not override the crucial role of soft skills in graduates' success in the world of work (Franco-Ángel et al., 2023; Ritter et al., 2018). Soft skills are essential to a worker's success in their professional career (Zeynalli, 2022). An overarching strategy for skills development in vocational education includes the development of technical knowledge and puts a significant focus on forming one's character and personality. Therefore, developing soft skills is also a must in developing a vocational education curriculum.

LITERATURE REVIEW

This research is supported by previous research references regarding the development of innovative models of soft skills in vocational education, soft skills are an important aspect in the success of workers in their professional careers. This will support the role of vocational education in preparing graduates to enter the world of work. The first research is about developing a SPA service-oriented learning model to improve the soft skills of vocational school students. The research uses the Research and Development (R&D) method with the ADDIE model. The results of the content validity test (Content Validity Ratio) show a CVI value for media experts of 0.98 and material experts of 0.97 (valid). Cronbach's Alpha reliability test for media is 0.707 and material is 0.766 (reliable). Media feasibility is 81.25% and material feasibility is 88.88% (very feasible). Practicality test: The teachers' response is 79.3% and the students' response is 76.5% (practical). The effectiveness test in the attitude domain is 56.06% and psychomotor is 70.56% (quite effective). So, the learning module developed has been declared feasible, practical, and effective for use in learning body care material and can improve the soft skills and psychomotor aspects of vocational school students (Nurvitasari et al., 2023).

The second research aims to test the influence of the project-work learning model on the development of students' soft skills and hard skills in the process learning of Mechanical Engineering. The research was conducted in the equipment manufacturing industry and mechanical engineering workshop at Yogyakarta State University. The research design uses research and development followed by experimentation. The sample of 41 vocational school students was determined using purposive sampling and divided into control and experimental classes. The instrument was validated by mechanical and educational experts. Data collection through questionnaires, observations, and assessment sheets on learning outcomes of the lathe process. Data were analyzed descriptively and by t-test with a significance value of 0.05. The research results show that students in the project-work class have better soft skills and hard skills than non-models. So, the project-work model is suitable for

vocational universities that have machining or mechanical engineering process learning because it has been proven to increase the acquisition of integrated soft skills and hard skills (Rahdiyanta, et al., 2023).

The third research develops an integrated soft skills learning model with a behavioristic approach. The model was developed through several stages starting from planning, determining soft skills attributes, preparing lesson plans, selecting learning models, to creating assessment instruments. The model is implemented during 3 face-to-face learning cycles. The results show that the model is very effective in improving students' soft skills, as seen from the average soft skills score which increased from 10.6 at the beginning to 20.4 at the end. Overall, the model was successfully developed and proven to be effective in improving students' soft skills (Imron et al., 2021).

The fourth research result explains the importance of developing soft skills in vocational education and technical training students to achieve the Sustainable Development Goals. Soft skills such as critical thinking skills, creativity, problem-solving, and communication are needed to compete in the global workplace. Teachers play an important role in developing these soft skills through innovative learning methods such as flipped learning, cooperative learning, and integrated and contextualized learning approaches. This research suggests balancing direct instruction with project-oriented instructional delivery to develop students' soft skills (Oviawe, 2020).

The fifth study showed that students in a vocational education program at a Mexican university of technology succeeded in developing key soft skills such as teamwork, problem-solving, leadership, and communication while practicing in the manufacturing industry. Students also experience the benefits of vocational education programs compared to traditional education models in terms of more solid knowledge and broader job opportunities. Most students stated that they had obtained sufficient theoretical knowledge from their educational institutions to carry out their duties at the Company (Ramos et al., 2023). The results show that vocational education is effective in developing students' soft skills needed in the world of work. Overall, these five studies show that the development of soft skills is an important aspect in determining the success and success of workers in their professional careers. Good soft skills will increase worker competency so that they can adapt and compete in the dynamic world of work.

Universities often struggle to develop effective and efficient approaches to improving the soft skills of their graduates. There is a clear gap between the focus of vocational universities on technical skills and the lack of attention to improving interpersonal, communication, problem-solving, and leadership skills (Kuang & Li, 2022; Rodzalan et al., 2022). Vocational universities still often experience difficulties formulating and implementing efficient approaches to equip students with essential soft skills (Caeiro-rodríguez et al., 2021). Insufficient resource allocation, insufficient understanding of industry requirements, and ambiguity around the incorporation of soft skills into the curriculum are crucial elements contributing to this suboptimal development (Caeiro-rodríguez et al., 2021; Sujová et al., 2021). This research seeks to develop and implement a strategic approach to address the existing gaps and effectively prepare individuals to deal with the demands of the contemporary work environment, thereby generating favorable impacts. This research generates not only intellectual benefits but also practical benefits. Implementing this strategic approach is expected to

produce vocational education graduates who demonstrate outstanding technical proficiency and have a strong foundation of soft skills.

This research focuses on developing a soft skills management model that is suitable for vocational universities. Soft skills are an important aspect in the success of graduates in the world of work, but are often neglected compared to the development of hard skills in the vocational education curriculum. Therefore, this research builds a management model for developing soft skills that is integrated into campus life. This model combines the development of soft skills in both academic and non-academic activities. Educational activities integrate soft skills into the curriculum through soft skills courses, project-based learning, and internship programs in industry. Meanwhile, the development of soft skills in extracurricular activities is conducted through soft skills training and student activity units. The focus of the soft skills model is to ensure that soft skills development is not separate but integrated into a holistic educational experience. Through this approach, students will be better prepared to face the complex demands of the world of work. Several programs in developing the soft skills model include: (1) Integration of soft skills in the curriculum, (2) Project-based learning, (3) Communication skills training, (4) Internship and job training programs, (5) Development of critical thinking skills, (6) Improving problem-solving skills, (7) Development of leadership skills, (8) Career counseling, (9) Self-development programs, and (10) Soft skills evaluation and feedback. Thus, the main focus of this research is to design and implement a soft skills development management model that is comprehensive and integrated into vocational campus life. This model is expected to help vocational universities prepare graduates who are technically competent and have superior character through mastery of soft skills.

Research Aim and Research Questions

The objective of this research is to create a model for managing soft skills that can be applied in vocational universities. Soft skills play a crucial role in the success of professionals in the workplace. However, vocational universities often face challenges in devising and implementing effective strategies to equip students with the necessary soft skills. This study aims to develop and implement a strategic approach to address these gaps and prepare individuals to meet the demands of the contemporary work environment. Research Questions include: (1) What are the problems related to the development of soft skills in vocational universities based on observations and interviews conducted?, (2) What kind of soft skills management model is suitable for implementation in vocational universities based on input from experts?, (3) Is the soft skills management model developed valid and reliable based on expert assessment?, (4) How is this soft skills management model implemented in academic and non-academic activities at vocational universities?, (5) What are the benefits gained from application of this soft skills management model in vocational universities?

This research question aims to explore problems related to the development of soft skills in vocational universities, design an appropriate model based on expert input, validate the model, implement the model in activities on campus, and evaluate the benefits of implementing this model. Thus, it is hoped that the resulting soft skills management model can help vocational universities prepare their graduates to have skills that suit industry needs.

METHODS AND METHODOLOGY

The method used in this study can be characterized as a research and development design. The main objective of R&D research is to create products that bridge educational research with practical applications. This technique offers a detailed description of the research methodology to obtain the specified product. This research was conducted to develop a soft skills management model suitable for vocational universities. The soft skills management design is expected to help vocational universities prepare their graduates to have skills following industry needs. This research uses the ADDIE development model to develop learning media. Learning media. The ADDIE model consists of an Analysis phase, Design phase, Development phase, Implementation phase, and Evaluation phase, as shown in Figure 1 (Dick & Carey, 2022). The data obtained in this study are qualitative and quantitative. The feasibility assessment was conducted through expert judgment consisting of ten experts in vocational, HR, and vocational Management.

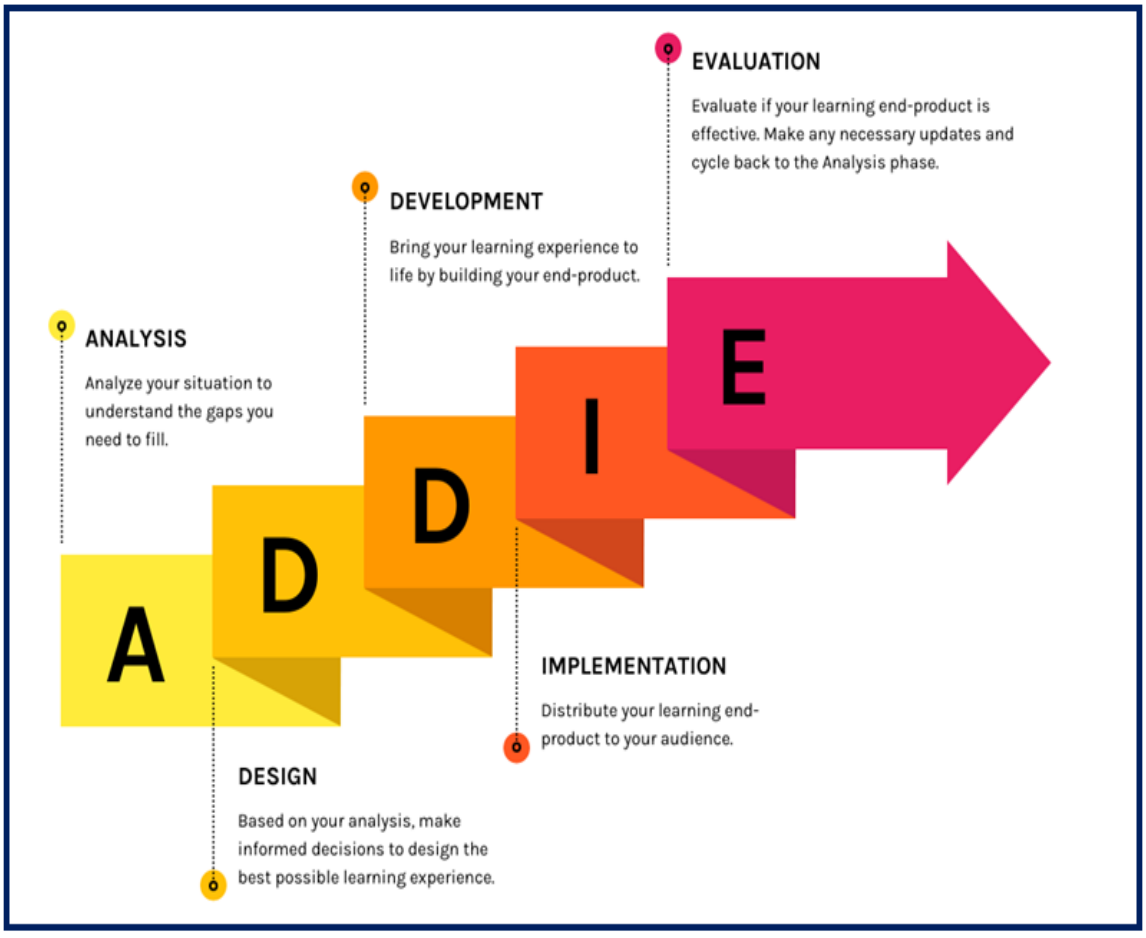

Figure 1: ADDIE Development Model (Dick & Carey, 2022)

Sample / Participants

Participants in this research are experts and practitioners from the fields of vocational education, soft skills development, and vocational education management. They are involved in various stages of research, starting from needs analysis, evaluation, to validation of the resulting soft skills development model. Based on the research methodology used, at the needs analysis stage, observations and interviews were

conducted at three universities such as Yogyakarta State University, Bandung State Polytechnic, and Malang State Polytechnic to identify problems related to soft skills development in vocational universities. At the model design stage, researchers collected various information from literature reviews, preliminary studies, and the results of current research related to the management of soft skills development in vocational universities. At the model implementation stage, a Focus Group Discussion (FGD) was conducted by inviting 4 vocational education experts, 10 soft skills experts, and 10 vocational management experts to provide input and evaluation of the model created. At the model evaluation stage, the validity and reliability of the model were tested by 10 experts, consisting of 4 vocational education experts, 3 soft skills experts, and 4 vocational management experts. They were asked to assess the suitability and consistency of the soft skills development model being conducted.

Instrument and Procedures

The instruments and procedures used in this research are Needs Analysis conducted through literature studies, observations and interviews to identify problems related to soft skills development in vocational universities. Model Design: Researchers gathered information from literature studies, related research, and reviews of existing soft skills management models as a reference for designing new models that suit needs. Model Development: Researchers created components, structures and tools for a new soft skills management model. The model was developed following the stages in the ADDIE development model. Model Implementation The model is implemented through a Focus Group Discussion (FGD) by inviting experts in vocational education, soft skills and vocational management to provide input and evaluate the model. Model evaluation is conducted through testing the validity and reliability of the model

Data Analysis

The purpose of this study was to establish a soft skills management model that is well-suited for vocational universities. The goal is to help vocational universities prepare their graduates with skills that align with industry requirements. The study collected both qualitative and quantitative data. The feasibility assessment was conducted through expert evaluations involving ten experts working in the fields of vocational, human resources, and vocational management. The model's validity was measured using a Likert scale based on assessments from the ten experts. The reliability test was performed using the split-half method with the Spearman Brown correlation formula. A 5-point Likert scale questionnaire, consisting of 20 statements, was used to assess the feasibility of the soft skills management model developed. It was evaluated by ten experts who were lecturers/practitioners of vocational education, soft skills, and education management. The model development process was based on the ADDIE model, which involves five stages: needs analysis, design, development, implementation, and evaluation. The data collected included qualitative data (expert input) and quantitative data (model feasibility assessment scores).

RESULTS

Need Analysis

Needs analysis is the stage of collecting data and information for developing soft skills management. Needs analysis is conducted through literature studies, observations, and interviews. Observations and interviews were conducted at three universities,

including Yogyakarta State University, Bandung State Polytechnic, and Malang State Polytechnic. The results of observations and interviews obtained problems related to the development of soft skills in higher education, namely (1) students are more dominantly given hard skills than soft skills; (2) soft skills management in vocational universities is still minimally integrated into courses; (3) The lack of special courses that equip students' soft skills; (4) there is no soft skills management model in vocational universities. Based on these problems, researchers developed a soft skills management model to equip students with the soft skills to be ready to work in the industry after implementation.

Design

The first step in developing a soft skills management model is to design the model. To gather material for product planning, researchers collect various information including interviews, literature studies, pre-surveys, and reviewing the latest research results related to soft skills management in vocational universities. The information and data obtained are very useful for researchers to determine what things need to be included in the soft skills management model. For instance, by interviewing vocational college students, researchers can find out what soft skills students feel are lacking and need improvement. The results of this interview are crucial for the development of a soft skills management model that will be tailored to the needs and preferences of students. Additionally, by conducting literature studies and reviewing the latest research on soft skills, researchers can gain insights into various theories and best practices for managing soft skills in other universities. For instance, they can explore effective soft skills training models and important components of soft skills development based on experts' perspectives. This knowledge is necessary to ensure that the designed model is tested and grounded in both theory and practice. By using this information as a reference, researchers are expected to create a comprehensive model for managing soft skills in vocational universities. This model will be evaluated for its effectiveness through trials and designed based on best practices and the unique needs of students. Ultimately, the resulting soft skills management model will be tailored to meet the specific soft skills development needs of vocational college students.

Development

At the development stage, the soft skills management model design that has been created previously is then realized into a complete model and ready to be implemented. Several important activities conducted at this development stage are compiling the components that will be included in the model, such as soft skills training methods and materials, soft skills development curriculum, and soft skills evaluation system. Then these components are structured systematically in a comprehensive soft skills training and development model. Apart from compiling components and structures, researchers also compiled various supporting tools for model implementation, such as learning modules and media, soft skills evaluation instruments, as well as standards and manuals needed so that the model can be implemented easily. The conceptual model of soft skills Management can be seen in Figure 2.

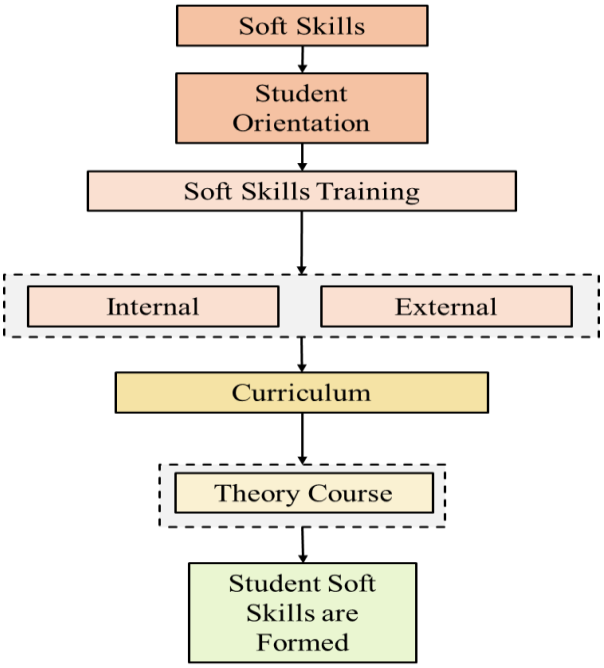

Figure 2: Conceptual Model of Soft Skills Management

Implementation

At this stage, the model was validated by experts in soft skills and vocational education. The implementation of the model was conducted by Focus Group Discussion (FGD). The FGD was conducted by inviting four vocational education experts, ten soft skills experts, and ten vocational management experts. The model created still needs to be completed. Input from several experts can be seen in Table 1.

Table 1: Results of Expert Judgment

No	Program	Feedback
1	Integration of Soft Skills in the Curriculum	Incorporate soft skills elements into the curriculum integrated with technical courses.
		Design projects and tasks that require collaboration, communication, and problem-solving
2	Project Based Learning	Focus on project-orientated teaching, where students can develop collaboration, problem-solving, and leadership skills.
		Teach how to apply technical knowledge in real-world situations.
3	Communication Skills Training	Provide both oral and written communication skills training.
		Train students to make presentations, reports, and project documentation.
4	Internship and Job Training Programme	Encourage students to participate in internship programs or work practices in related companies.
		Support the development of soft skills through hands-on experience in the world of work.
5	Critical thinking skills development	Train students to think critically, analyze information, and make decisions based on data.
		Give tasks that encourage analytical thinking.
6	Improved Problem-Solving Skills	Focus on developing problem-solving skills by emphasizing projects that involve real challenges.
		Teach systematic problem-solving methods.
7	Leadership Skills Development	Provide opportunities for students to take leadership roles in student projects or organizations.
		Practice leadership, delegation, and team management skills

No	Program	Feedback
8	Career Coaching and Counselling	Provide career coaching and counseling services that help students identify and develop the soft skills required in their field of interest.
		Encourage students to create a career plan that includes soft skills development.
9	Personal Development Programme	Universities can organize workshops, seminars, or additional training programs for self-development, including time management, emotional intelligence, etc.
		Support extracurricular activities that encourage soft skills development.
10	Evaluation and Feedback	Use evaluation methods that include soft skills.
		Provide constructive feedback to students to help them understand and improve their soft skills.
		It is essential to ensure that soft skills development is not just separate but integrated into the overall educational experience. Through this holistic approach, students will be better equipped to deal with the complex demands of the world of work.

Evaluation

At this stage, revisions were made to the model and model content structure following the input provided by the experts. The revised soft skills management model based on suggestions from experts. The soft skills management model can be seen in Figure 3.

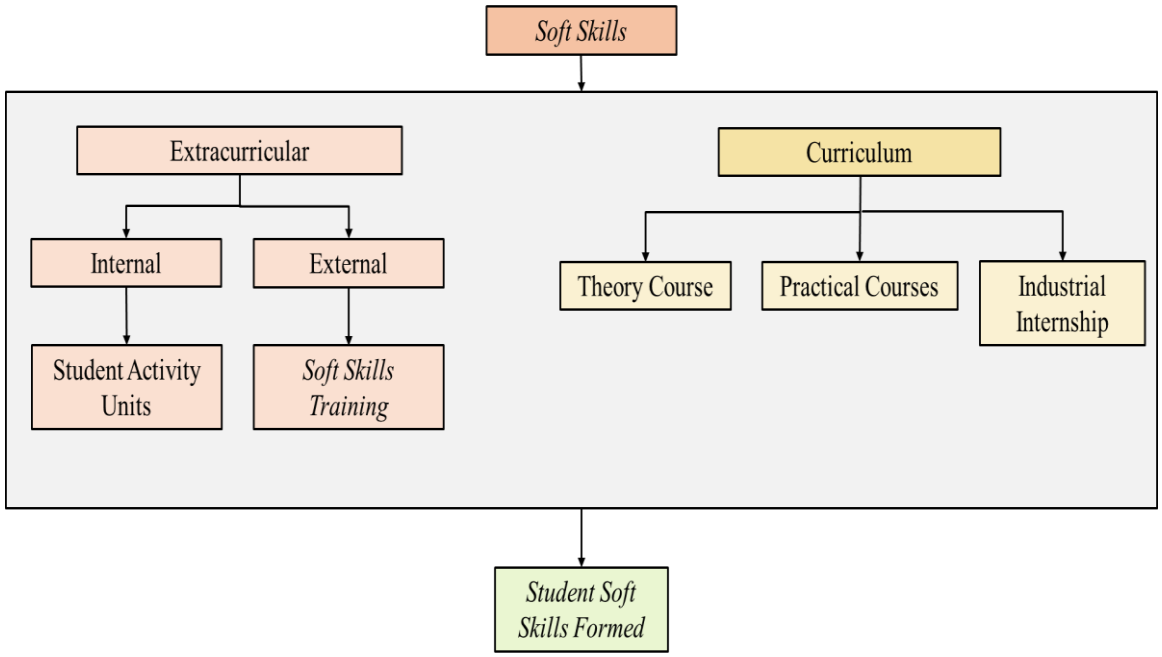

Figure 3: Soft Skills Management Model

The soft skills management model strategy in vocational universities uses a holistic approach that includes courses, project-based learning, specialized training, internships, and extracurricular activities. The vocational education curriculum includes soft skills courses, enabling students to understand theories and concepts and their application in real-life contexts. Project-based learning creates practical experience in solving problems that require collaboration and communication with team members. Internship programs provide students with real-world experience. Extracurricular activities through student activity units help students hone their soft skills. Evaluation of the feasibility of the soft skills management model was conducted through need assessment. Need assessment is conducted using a Likert scale. The Linkert scale used can be seen in Table 2.

Table 2: Rating Scale

No	Categories	Scale
1.	Highly Suitable	5
2.	Suitable	4
3.	Moderately Suitable	3
4.	Less Suitable	2
5.	Not Suitable	1

The research assessment instrument used 20 statement items about the Soft Skills management model in vocational universities. The model was validated by ten experts consisting of 4 vocational experts, 3 soft skills experts, and 4 vocational management experts from Yogyakarta State University, Bandung State Polytechnic, and Malang State Polytechnic. The reliability test used the split half method with the Spearman Brown correlation formula. The reliability test assessment criteria can be seen in Table 3. (Barker et al., 2015).

Table 3: Reliability Assessment Standard

No	Category	Scale
1.	Good	0,80
2.	Acceptable	0,70
3.	Marginal	0,60
4.	Poor	0,50

Based on the results of the validity test and reliability test, the soft skills management model is classified as valid and reliable. The validity test is 1.00. For the reliability test, r = 0.84. This reliability test is in the 'good' category.

DISCUSSION

The soft skills management model developed thoroughly integrates in academic and non-academic activities. Educational activities incorporate soft skills into the curriculum through soft skills courses, project-based learning, and internship programs in industry, while soft skills development in extracurricular activities is conducted through soft skills training and student activity units. Providing a separate space for soft skills courses in the vocational education curriculum gives greater focus and attention to developing specific soft skills (Kuregyan & Khusainova, 2022). Through specialized courses, evaluation of the progress of developing specific Soft skills can be measured clearly and more objectively. Specialized courses make Soft skills academically valuable and part of the assessment, thus encouraging students to be more motivated to develop their Soft skills. Through specialized courses, soft skills development can be designed according to the specific type of skills to be developed, as well as in accordance with students' career goals and relevance to the characteristics of vocational universities.

The project-based learning method involves several activities, such as project planning, peer collaboration, project work, and evaluation and reflection (Guo et al., 2020). In this method, the lecturer is a facilitator who supports students in developing their soft skills (Gozalo et al., 2020). In the project-based learning method, students are directed to hone their skills of cooperation, communication, critical thinking, problem-solving, and decision-making from various alternative solutions that arise (Torrijo et al., 2021; Vogler et al., 2018). The use of project-based learning methods in developing soft skills has a positive impact by creating graduates who are better

prepared to face the world of work challenges (Patil & Kamerikar, 2020; Vogler et al., 2018). Vocational education graduates are technical experts and adaptive, collaborative, and communicative professionals, advancing their ability to succeed in various professional contexts.

The industrial internship program provides valuable practical experience and acts as an essential platform for developing soft skills needed in the world of work (Lan, 2021; Madigan et al., 2019; Sutiman et al., 2022). The internship program provides direct experience in the world of work, facilitates students to understand the relationship between theory and practice, hones communication and collaboration skills, hones problem-solving skills, and improves adaptability to change (Chen & Gan, 2021; Meza Rios et al., 2018). In addition, internship programs also provide opportunities to expand professional networks, establish work ethics, and develop an attitude of responsibility.

Soft skills training is an important step in preparing individuals to succeed in the ever-changing and competitive world of work (Lapiņa & Ščeulovs, 2014). The training engages professionals to provide in-depth insights and knowledge on industry trends and skill demands (Cacciolatti et al., 2017). Soft skills training aims to bridge the gap between the skills possessed by vocational higher education graduates and the needs of the professional world. Leadership training, practical communication training, critical thinking training, collaboration skills training, and problem-solving training are some of the training needed by vocational higher education.

Student Organisations are integral in developing students' soft skills in higher education (Qi Zhang et al., 2018; Qiannan Zhang et al., 2022). Students' active roles in student organizations allow them to develop communication, collaboration, and teamwork skills. Projects undertaken in student organizations also allow students to hone their critical thinking, problem-solving, and decision-making skills. Involvement in student organizations requires responsibility and effective time management to help students hone self-management skills. This research has successfully created a soft skills management model suitable for higher vocational education. Evaluations conducted by experts show that the soft skills management model has good quality. Through soft skills development management will be integrated thoroughly into academic and non-academic aspects. Soft skills development cannot be done instantly but needs a continuous process. Model soft skills development can be conducted continuously to produce graduates with soft skills that can support their technical skills.

CONCLUSION

This research succeeded in producing a soft skills development management model that is suitable for vocational universities. This model integrates the development of student soft skills as a whole in both academic and non-academic activities. Educational activities incorporate elements of soft skills into the curriculum through soft skills courses, project based learning, and internship programs in industry, while soft skills development in extracurricular activities is conducted through soft skills training and student activity units. It is hoped that this comprehensive model can help vocational universities prepare their graduates to have skills that suit industry needs. The development of soft skills that are integrated into campus life will also shape student character and personality, thereby producing graduates who are superior in

both technical competence and character. This research contributes theoretically and practically, especially in the field of vocational education. However, this research is still limited in terms of the implementation of the model which has not been conducted widely. Further research is needed to test the effectiveness of this model in improving the soft skills of vocational students through field trials involving large student samples and over a certain period of time. In this way, empirical evidence regarding the impact of the soft skills development management model on improving the soft skills of vocational graduates can be obtained. Forming students' soft skills cannot be done instantly but needs a continuous process. Developing soft skills thoroughly through academic and non-academic activities is the right step. Soft skills development management model integrating soft skills development into campus life. Soft skills development is a valuable investment; it helps students prepare for the dynamic world of work. The validity and reliability test results showed that the soft skills management model was declared valid and reliable. The validity test is 1.00. While the reliability test is r = 0.84, so the soft skills management model is in the 'good' category. Good soft skills development management will help vocational universities prepare their graduates to become technically competent individuals with superior character.

Acknowledgements

Financial support provided by the Center for Higher Education Funding (BPPT) and Indonesia Endowment Fund for Education (LPDP).

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