JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(2), 1383-1394
ISSN: 2589-1316

Effective Students' Development of Soft Skills, Hard Skills, and Competitiveness (SHC)Through Internship Program

Hadiyanto[1]*, Nazarudin[2], Achmad Hizazi [3], Mia Aina [4], Rendra[5]

[1] *Faculty of Education and Teacher Training, Universitas Jambi Kampus Unja Mendalo, Jl. Jambi - Muara Bulian Km. 15, Mendalo Indah, Jambi Luar Kota, Muaro Jambi,* INDONESIA
[2] *Faculty of Science and Technology, Universitas Jambi Kampus Unja Mendalo, Jl. Jambi - Muara Bulian Km. 15, Mendalo Indah, Jambi Luar Kota, Muaro Jambi,* INDONESIA, *nazarudin@unja.ac.id*
[3] *Faculty of Economics and Business, Universitas Jambi Kampus Unja Mendalo, Jl. Jambi - Muara Bulian Km. 15, Mendalo Indah, Jambi Luar Kota, Muaro Jambi,* INDONESIA, *hizazi@unja.ac.id*
[4] *Faculty of Education and Teacher Training, Universitas Jambi\Kampus Unja Mendalo, Jl. Jambi - Muara Bulian Km. 15, Mendalo Indah, Jambi Luar Kota, Muaro Jambi,* INDONESIA, *mia.aina@unja.ac.id*
[5] *Kampus Unja Mendalo, Jl. Jambi - Muara Bulian Km. 15, Mendalo Indah, Jambi Luar Kota, Muaro Jambi,* INDONESIA, *Faculty of Agriculture, Universitas Jambi, rendra_pertanian@unja.ac.id*

*__Corresponding Author:__ hadiyanto@unja.ac.id

Citation: Hadiyanto., Nazarudin., Hizazi, A., Aina, M and Rendra. (2025). Effective Students' Development of Soft Skills, Hard Skills, and Competitiveness (SHC)Through Internship Program, *Journal of Cultural Analysis and Social Change*, 10(2), 1383-1394. https://doi.org/10.64753/jcasc.v10i2.1810

Published: November 14, 2025

ABSTRACT

This study aimed to investigate the effectiveness of training and supervision in internship in fostering students' 21st-century skills, with a focus on three main elements, namely soft skills, hard skills, and competitiveness. A quasi-experiment was conducted on three groups of participants, namely Group A (students receiving both training and supervision), Group B (students receiving supervision only), and Group C (students receiving neither training nor supervision). A self-evaluation questionnaire was distributed to participants after treatment. The results showed Group A perceived development of 21st-century skills and its elements to be significantly higher than Groups B and C, while Group B reported higher development than Group C. Providing training and intensive supervision to internship students could improve their 21st-century skills in the areas of soft skills, hard skills, and competitiveness. The study implied that students internship should be well prepared, implemented, monitored, and evaluated with measurable output skills and outcome values.

Keywords: soft skills, hard skills, online learning, student-centred, higher education, English teaching.

INTRODUCTION

Empowering University graduates with 21st-century skills is a global and ongoing issue in the modern era. A lack of graduates' skills, mismatch, enterprises' needs, low graduate adaptability, and competitiveness are among the issues widely discussed in both academic and non-academic contexts (1–3). Many studies have examined students' skills acquisition during internship, with some showing their effectiveness (4–7). However, the effectiveness of internship remains debated and under discussion on the global stage. Previous studies have also suggested that innovation in internship curriculum and management should be addressed.

The issues are further addressed in Indonesia, with the Ministry of Education, Research and Technology launching a new higher education curriculum paradigm called *Merdeka Belajar Kampus Merdeka* (MBKM), meaning Freedom to Learn, Independent Campus. This curriculum allows students to take up to 60 credits outside the regular curriculum. It includes eight learning activities, one of which is students internship (8,9). Internship serves

as an educational process designed to facilitate experiential learning in the workplace. Although the program is still developing, it presents a valuable opportunity to establish clear implementation standards and measurable skill outcomes to improve effectiveness.

Internship is not new to universities in Indonesia or worldwide. It is expected to bridge the gap between universities and the workplace (7,10). However, in practice, the results have often fallen short of expectations. Many internship students simply complete the course without producing measurable evidence of the skills acquired. Although some studies have examined the effectiveness of internship in developing students' technical skills and providing workplace experience, there remains limited discussion, both locally and globally, on the curriculum design and measurable outcomes of the program.

The changes and challenges in the working environment caused by the Industrial Revolution 4.0 require universities to respond promptly and innovate to improve the quality of internship, ensuring that graduates meet employers' expectations (11–13). Internship is implemented to provide students with learning experiences in real working environments. Students are expected to gain valuable work experience and develop employability skills during the internship placement.

Several studies have examined internship and the effect on students' knowledge, technical abilities, soft skills, and employability skills (4,7,14–19). However, there are limited investigations on the effectiveness of internship in improving students' soft skills, hard skills, and particularly, competitiveness. There are also a few studies on the effect of pre-training and supervision during internship on students' 21st-century skills. Although most investigations were conducted using surveys, case studies, or ex-post facto designs, the current study applied an experimental design with group comparisons. This method is expected to provide more insights into the effectiveness of internship in developing students' 21st-century skills. The study specifically investigated the impact of prior training and ongoing supervision in internship on three key skill sets, namely soft skills, hard skills, and competitiveness (SHC).

The 21st-Century Skills in the Present Study Context

University graduates should be equipped with soft and hard skills to attain a certain level of competitiveness, helping to meet challenges of the global job market both presently and in the future (20–23). In line with this objective, the Indonesian higher education (HE) curriculum recognizes students' internship as one of its learning activities, valued at 20 credits. After completing the program, students are expected to have a set of globally relevant skills (8,24). However, no specific skill set has been officially defined by HE for acquisition during the program. The implied standard is that students should develop adaptive, employability, and soft skills, as well as lifelong learning abilities, and entrepreneurial competencies.

Soft skills have long been discussed in both educational and professional contexts, in education, regarding how the skills are integrated into learning processes and outcomes, while in the workplace, regarding how employees apply the skills in daily tasks. Both contexts point in the same direction, as students are expected to acquire a certain level of soft skills (1,25,26). Although various definitions and classifications of soft skills exist in the literature, expert consensus emphasizes key common elements. Based on literature analysis and previous studies, the soft skills examined in this study included communication, information technology, numeracy, learning, problem-solving, and teamwork (20,25–28).

The literature defined hard skills as specific subject knowledge and technical abilities students and graduates should possess and apply in the workplace (28–30). These skills are generally acquired through structured education, training initiatives, internship, self-directed learning, and practical experience. Furthermore, the skills are essential for executing technical tasks and are often listed in resumes and job postings to showcase candidates' qualifications. In the workplace, hard skills are job-specific and directly related to the tasks and responsibilities of a particular role (29,31). When a new graduate is assigned to a role outside the primary academic background, it is important to adapt and acquire the relevant hard skills required for the position (4,22,32). In this study, hard skills were assessed based on the extent internship students could apply knowledge and skills, and handle specific tasks assigned by the employer.

Competitiveness generally refers to the ability of individuals, organizations, or entities to maintain or improve their position relative to others within a given competitive environment (33–35). In the study, competitiveness referred to an individual's willingness and effort to apply, maintain, improve, and promote personal skills in the workplace, with the expected impact of accelerating productivity both quantitatively and qualitatively. Competitiveness is further categorized into lifelong learning, entrepreneurship, and employability (27,36–39).

Concept of Internship and Students' Soft Skills, Hard Skills, and Competitiveness Engagement: Indonesian Context

The Indonesian higher education system instructs universities to implement an internship curriculum by increasing the number of credit units to 20 for participating students. Depending on the university's policy, the credit units may be divided into several skill areas, and the internship curriculum can be designed to engage students in activities with skills-based outcomes. The allocation of up to 20 credits for internship represents a forward-thinking strategy to connecting higher education with job readiness (8,9). In an international context, Indonesia's strategy is both ambitious and skills-focused, although it requires strong implementation frameworks to ensure its success and sustainability. This corresponds to constructive alignment theory (40–42), where learning objectives, instructional methods, and evaluations should be systematically organised to promote deeper understanding and real-world applicability.

Internship activities provide practical, on-the-job training that introduces students to the real world of work, fostering understanding, appreciation, and development of relevant skills. These activities are expected to improve students' soft and hard skills, typically fostering their competitiveness in the job market (4,5,42,43). Internship bridges the gap between the competencies gained through classroom learning and the application in the workplace. Students are expected to adapt to different types of work, specifically their primary academic discipline. In principle, disciplinary knowledge serves as a foundation for acquiring new, practical workplace skills (5,10,18,19). Therefore, the acquisition of soft skills, hard skills, and competitiveness acquisition transcends the classroom to the workplace.

The relationship between students' soft and hard skills is that as both develop, the overall competitiveness increases. Confidence in these skills directly impacts the quality and productivity of work, consequently influencing the company's competitiveness. This reflects the theory of how graduates contribute to workplace performance. Internship activities should enable students to actively and broadly apply both skills to achieve a high level of competitiveness (23,34,36,43–45).

Figure 1 presents the intervention concept applied during internship. The internship curriculum incorporates soft skills, hard skills, and competitiveness, along with structured methods for supervising and assessing performance indicators (5,6,8,16–18,27,46). As shown in the output box in the figure, the intended result is the development of more competitive graduates.

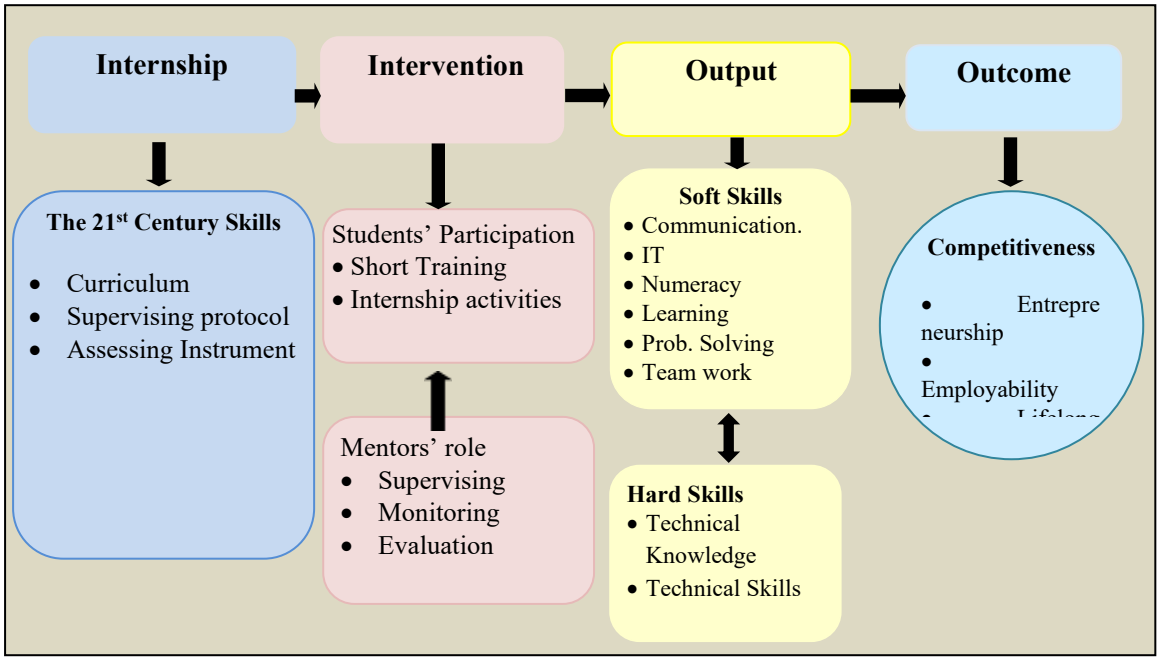

FIGURE 1. Concept of Internship and Students' Soft Skills, Hard Skills, and Competitiveness Engagement

Design of the Study

This study was designed and conducted to test an apprehension curriculum implemented in students' internship. The program aimed to develop students' 21st-century skills, classified into three main elements, namely soft skills, hard skills, and competitiveness. Soft skills were further divided into sub-elements, namely communication, digital technology, numeracy, learning, problem-solving, and teamwork. Meanwhile, hard skills

remained as one main element. Competitiveness comprised sub-elements such as entrepreneurship, lifelong learning, and employability. In total, 10 skills were assessed as outcomes of the internship.

A non-equivalent group quasi-experimental design, with and without a pre-test, was applied. Furthermore, there was a comparison of 21st-century skills achievement of internship students with training and supervision (Group A), those with supervision only (Group B), and those without training or supervision in the 21st-century skills (Group C). Data were collected through a face-to-face survey at the end of the internship.

Table 1 Quasi experimental design without pre-test

Group	Treatment-(Independent Variables)	Post-Assessment (Dependent Variables)
Group A	Y^1	X
Group B	Y^2	X
Group C	Y^3	X

X = The 21st-Century Skills; Soft Skills, Hard Skills, and Competitiveness
Y^1= Training and Supervision
Y^2= Supervision
Y^3= Without Training and Supervision.

Voluntary sampling was applied to recruit participants, in cooperation with the Students' Development Office of the university. A total of 105 students who were available and preparing for internship were selected. The students were purposively allocated into three experimental classes, namely Groups A, B, and C, based on a balance of faculty and academic background. A total of 12 mentors for Groups A and B attended a workshop for internship preparation, while 5 others carried out duties by following the university's standard guidelines. The mentor's tasks were to monitor and guide participants in practicing the 21st-century skills, based on the checklist guidelines (see attachment).

Before the internship commenced, experimental students in Group A received one week of training in order to gain knowledge in soft skills, hard skills, and competitiveness. Furthermore, mentors of Groups A and B attended a workshop to practice and design a supervision system aimed at developing students' 21st-century skills during the internship. Mentors of Group C followed the regular supervision preparation for the program without a specific 21st-century skills curriculum provided by the Students' Development Office.

Instrumentation, Reliability, and Validity

Self-evaluation questionnaires were used to measure students' soft skills, hard skills, and competitiveness post-treatment. Before the study commenced, the self-assessment instrument had been adapted and updated from previous investigations (35,36,47–49). The adaptation process was conducted through two rounds of workshops involving internship supervisors (lecturers) and stakeholders. As a result, some indicators were removed, while others were revised to contextualise with workplace practices. Each element consistently comprised three statements or indicators.

Cronbach's alpha and corrected total correlations were used to determine the reliability of students' self-assessments. A Cronbach's alpha coefficient of 0.70 is considered good for elements with 10 or more items, while a coefficient of 0.60 is acceptable for elements with fewer than 10 items. For validity, a corrected item-total correlation of 0.30 is sufficient (50–52). In the current study, the consistency analysis for overall 21st-century skills produced a Cronbach's alpha coefficient of 0.87. Furthermore, all items in each element produced a minimum corrected item-total correlation of 0.30 and an α level greater than 0.60. In summary, the measurement of students' 21st-century skills in all elements was both reliable and valid.

Table 2. Reliability of the self-evaluation questionnaire

Variables	Item	Corrected item-total correlation	Cronbach Alpa
Overall 21st-Century Skills	30	-	0.87
A. Soft Skills	18	-	0.78
1. Communication Skills	3	0.42 – 0.50	0.64
2. Digital IT Skills	3	0.30 – 0.58	0.63
3. Numeracy	3	0.35 – 0.53	0.60
4. Learning Skills	3	0.34 – 0.57	0.64
5. Problem-Solving Skills	3	0.39 – 0.53	0.63

6. Teamwork	3	0.39 – 0.48	0.61
B. Hard Skills	3	0.43 – 0.55	0.66
C. Competitiveness	9	-	0.83
1. Employability	3	0.51 – 0.58	0.72
2. Entrepreneurship	3	0.44 – 0.52	0.67
3. Lifelong Learning	3	0.47 – 0.50	0.66

Participants' Characteristics and Distribution

The crosstab analysis was conducted to assess the distribution of participants across various background variables, such as faculty affiliation, disciplinary group, partner institution, gender, and CGPA, in relation to the training and supervision, the supervision-only, and the control groups. The analysis showed a mostly balanced distribution among groups, with slight and insignificant differences in faculty representation and GPA categories. In summary, participants' backgrounds tended to significantly affect the comparative analysis outcomes among the groups.

Table 3. Crosstabulations of participants' characteristics

Faculty	Group A	Group B	Group C	Total
Economy	6	4	6	16
Law	6	4	8	18
Agriculture	2	9	5	16
Education	7	8	3	18
Husbandry	7	4	10	21
Science Group	Group A	Group B	Group C	Total
Science	16	19	18	53
Applied Social Science	19	16	17	52
Total	35	35	35	105
Type of Partner Institutions	Group A	Group B	Group C	Total
Government Institution	12	14	14	40
Private Enterprises	12	8	9	29
State Enterprises	11	13	12	36
Total	35	35	35	105
Gender	Group A	Group B	Group C	Total
Male	11	12	11	34
Female	24	23	24	71
Total	35	35	35	105
CGPA	Group A	Group B	Group C	Total
3.0 - .3.25	4	5	5	14
3.26 - 3.50	15	12	17	44
3.51 - 3.75	10	14	8	32
3.76 - 4.00	6	4	5	15
Total	35	35	35	105

Data Analysis

Descriptive and cross-tab analyses provided a tabulation of participants' characteristics and mean comparison across groups. For statistical comparisons, ANOVA was used to examine differences in the overall mean score of 21st-century skills across groups. Normality test (Kolmogorov-Smirnov) and homogeneity of variance assumptions for the dependent variable (21st-century skills) were met, hence, ANOVA with post hoc Bonferroni correction was applied (51). MANOVA was also used to assess significant differences across more than one dependent variable among the three groups of participants. However, the assumptions of MANOVA, specifically multivariate normality and homogeneity of covariance matrices (BOX'S M test), were not met. The multivariate test 'Pillai's Trace' was used to interpret the MANOVA results, as it was more robust against violations of equality, homogeneity, and normality assumptions. For post hoc analysis of the dependent variables, the Games-Howell test was used, since the assumption of equality of error variances (Levene's test) was not satisfied (53,54).

Accordingly, the MANOVA results presented in the results section were protected against both Types I and II errors (Table 3).

Table 4 Comparison Analysis Tools and Assumptions

Comparison group	**Dependent Variable/s (DV/s)**	**Assumptions meet**			**Appropriate tool of analysis**
		Normality	**Equality of Covariance Matrices**	**Homo-geneity**	
Group A Group B Group C	The 21st-Century Skills	Yes	No need	Yes	ANOVA with Bonferroni Post Hoc test.
Group A Group B Group C	Main Elements of the 21st-Century Skills Soft Skills Hard Skills Competitiveness	No	No	Yes	MANOVA Pillai's Trace, and Games-Howell post hoc

RESULTS

Descriptive Results

Table 5 presents the mean differences across Groups A, B, and C in relation to 21st-century skills. Students in the training and supervision group (Group A) showed the highest mean scores in each element and indicator of 21st-century skills, compared with Groups B and C, while Group B outperformed C in all aspects. These descriptive results confirmed that the model applied in internship could improve students' 21st-century skills.

Table 5 Descriptive Comparison of mean score 21st-century skills among groups

Variables	Group A		Group B		Group C	
	Mean	Std.D	Mean	Std.D	Mean	Std.D
The 21st-Century Skills	4.64	0.20	4.47	0.27	4.22	0.16
A. Soft Skills	4.59	0.22	4.42	0.25	4.20	0.18
Communication	4.68	0.24	4.54	0.22	4.17	0.29
Digital IT	4.60	0.36	4.38	0.43	4.23	0.39
Numeric	4.57	0.32	4.42	0.43	4.25	0.41
Learning	4.61	0.34	4.32	0.52	4.16	0.41
Problem-solving	4.58	0.35	4.42	0.49	4.24	0.41
Teamwork	4.51	0.44	4.41	0.51	4.14	0.45
B. Hard skills	4.59	0.37	4.45	0.38	4.20	0.43
Entrepreneurship	4.75	0.21	4.58	0.42	4.26	0.35
Long life learning	4.60	0.37	4.44	0.59	4.14	0.48
Employability	4.81	0.23	4.62	0.51	4.27	0.42
C. Competitiveness	4.84	0.27	4.67	0.42	4.38	0.44

The Difference Analysis Between Groups toward the 21st-Century Skills

The multivariate analysis using Pillai's Trace, as shown in Table 8, showed a statistically significant effect of group membership on the combined dependent variables (soft skills, hard skills, and competitiveness), with F =

8.553, $p < .001$, and a considerable effect size (Eta Squared = .203). Univariate analyses for each variable in Tables 9 and 10 showed that soft skills varied significantly among the groups ($F = 26.417$, $p < .000$, $\eta^2 = .341$). Post-hoc comparisons showed that Group A obtained significantly higher scores than Groups C and B ($p < .01$), confirming improved soft skills. Differences in hard skills were also significant ($F = 8.626$, $p < .001$, $\eta^2 = .145$), with Group A outperforming Group C ($p = .000$) and Group B performing better than Group C ($p = .030$), confirming that training significantly improved hard skills. However, no statistically significant difference was found between A and B. Similarly, results showed significant disparities in competitiveness ($F = 18.437$, $p < .001$, $\eta^2 = .266$), with Group A outperforming Group C ($p = .000$) and Group B performing better than Group C ($p = .003$), while no significant difference was observed between A and B.

Table 8 MANOVA. The Difference Main Elements of the 21st-Century Skills across the groups

Effect	N		Pillai's Trace	F	DF1	DF2	Sig.	Eta Squared
Group	Group A	35	.405	8.553	6.000	202.000	.000	.203
	Group B	35						
	Group C	35						

Significant level at 0.05

Table 9. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Kelompok	Soft Skill	2.515	2	1.257	26.417	.000	.341
	Hard Skills	2.758	2	1.379	8.626	.000	.145
	Competitiveness	4.356	2	2.178	18.437	.000	.266
R Squared = .341 (Adjusted R Squared = .328)							
R Squared = .145 (Adjusted R Squared = .128)							
R Squared = .266 (Adjusted R Squared = .251)							

Table 10. Post Hoc Games-Howell across groups

Dependent Variable	(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	
Soft Skills	Group A	Group B	.1619	.05592	.014	
		Group C	.3778	.04684	.000	
	Group B	Group A	-.1619	.05592	.014	
		Group C	.2159	.05327	.000	
	Group C	Group A	-.3778	.04684	.000	
		Group B	-.2159	.05327	.000	
Hard Skills	Group A	Group B	.1333	.09082	.313	
		Group C	.3905	.09690	.000	
	Group B	Group A	-.1333	.09082	.313	
		Group C	.2571	.09881	.030	
	Group C	Group A	-.3905	.09690	.000	
		Group B	-.2571	.09881	.030	
Competitiveness	Group A	Group B	.1746	.08095	.089	
		Group C	.4921	.06993	.000	
	Group B	Group A	-.1746	.08095	.089	
		Group C	.3175	.09386	.003	
	Group C	Group A	-.4921	.06993	.000	
		Group B	-.3175	.09386	.003	

Conclusion of Analysis Results of Descriptive and Inferential Statistics

The results showed a significant correlation between the descriptive statistics and the inferential analyses (ANOVA and MANOVA), confirming the effectiveness of the interventions applied across the groups.

Descriptive comparisons showed that Group A consistently achieved the highest average scores across all measured variables (21st-century skills, soft skills, hard skills, and competitiveness), followed by Group B, with Group C recording the lowest scores. These trends were statistically confirmed by the ANOVA results, confirming significant disparities in 21st-century skills among the groups ($F = 32.887$, $p < .001$). Post hoc Bonferroni analyses further showed that Group A markedly outperformed both B and C. Similarly, the MANOVA results showed a significant multivariate effect of group membership on the three variables (Pillai's Trace = .402, $F = 8.477$, $p < .001$, $\eta^2 = .201$). Follow-up univariate analyses confirmed significant differences among the groups in all three domains. Group A outperformed C in all respects, while the differences between A and B were statistically significant for soft skills but not for hard skills or competitiveness. This confirmed that despite Group A's superior averages, the performance gap with Group B in these domains was narrower. In summary, the results showed the interventions produced a consistent and measurable impact, especially when comparing the treated groups (A and B) to the control group (C).

DISCUSSION

The results provided strong evidence of the efficacy of interventions in internship, particularly those enriched with pre-internship training and structured supervision, in cultivating 21st-century skills among university students. The significant variations observed among the three groups, particularly in soft skills, hard skills, and competitiveness, confirmed the effectiveness of the intervention design. The results corresponded to the study's conceptual framework, which recognized internship as a vital element in shaping students outcomes when supported by specific learning objectives and proactive supervision (15,17,55).

Consistent with the descriptive data, Group A, which received both training and supervision, achieved the highest average scores across all measured areas, followed by B, while C (the control group) consistently recorded the lowest scores. The ANOVA and MANOVA results statistically confirmed these trends, showing significant effect sizes for soft skills, hard skills, and competitiveness. The results confirmed that well-structured internship, developed with clear learning objectives and active participation strategies, could significantly improve students' acquisition of workplace-relevant skills.

The improvements observed in soft skills such as communication, collaboration, adaptability, and digital IT proficiency were particularly significant. The results validated the claims made in the introduction that soft skills were crucial for navigating both educational and professional environments. Furthermore, soft skills were confirmed as essential traits for adaptability and problem-solving in dynamic work contexts (56,57). The advancements in the domains supported the argument that soft skills should be intentionally integrated into internship curricula, rather than being anticipated as unintended outcomes of workplace experience.

The development of hard skills, especially the use of technical knowledge in task-driven positions, showed that internship effectively connected classroom theory with practical application. Although the distinction in hard skills between Groups A and B was not statistically significant, both groups significantly exceeded Group C's performance. Therefore, the results supported the theory that hard skills are optimally gained through practical, contextual learning experiences, especially when supplemented with guidance and evaluation (58–60)

The noted improvements in competitiveness, measured through lifelong learning, entrepreneurship, and employability, strengthened the belief that students' job performance and success after graduation were affected by the interaction of soft and hard skills. The results confirmed the framework outlined in the introduction, emphasizing the relationship between developing soft and hard skills and students' marketability in the job market (61,62). Therefore, the strong impact on competitiveness corresponded to the notion that structured internship improved graduates' long-term job prospects and career adaptability (6,18,63).

The results addressed gaps noted in the literature review. Although many studies examined the overall advantages of internship, only a limited number empirically analyzed how pre-internship training and continuous supervision impacted students' development of soft skills, hard skills, and competitiveness within an experimental setting. The current study uniquely contributed to the field, confirming that the preparatory and supervisory actions were essential and advantageous to fully harness the learning potential of internship, especially within the policy framework in Indonesia.

Implication

This study provided valuable insights for curriculum developers, policymakers in higher education, industry participants, and internship supervisors, particularly in relation to the implementation of the internship curriculum policy in Indonesia.

The results showed that pre-internship training and structured oversight throughout internship significantly improved students' development of 21st-century skills, comprising soft skills, hard skills, and competitiveness.

Therefore, internship should be included in the curriculum rather than being seen as separate experiences, incorporating clear learning objectives, mentorship programs, and performance assessments. The ramifications were evident, as universities were expected to establish and apply consistent criteria for internship preparedness, execution, and evaluation to ensure skill transfer was measurable and corresponded to job demands.

The superior performance of students in Group A, who underwent training and supervision, emphasized the importance of skills development for internship supervisors in both academic institutions and partner organizations. Supervisors needed training to help students apply classroom knowledge to real-world tasks, foster reflection, and improve skills. This emphasized the importance of collaborations between universities and industries, where host organizations played a crucial role in improving students' skills for employment.

The improvement in students' competitiveness attributes, such as lifelong learning, employability, and entrepreneurial spirit, confirmed that structured internship contributed not only to immediate skill application but also to long-term graduate readiness in a volatile and technology-driven labor market. In line with global demands, universities should view internship as a strategic platform to promote future-proof competencies that transcend disciplinary boundaries (61,64,65).

This study offered methodological insights for investigations centered on internship and skills development. Unlike many previous studies relying on surveys and retrospective evaluations, the current study used an experimental method, emphasizing the significance of evidence-based educational intervention models. Therefore, future investigations and policy initiatives should use similar strategies to methodically assess and improve internship frameworks at both the institutional and national levels.

CONCLUSION

In conclusion, this study emphasized that internship combined with pre-internship training and structured supervision significantly improved students' 21st-century skills, namely soft skills, hard skills, and competitiveness. Students who received both training and supervision showed the most significant improvement, followed by those receiving only supervision, confirming that structured intervention was essential for skills development. Therefore, internship should not be treated as isolated experiences but integrated into a strategic curriculum supported by measurable learning objectives and active mentorship. Based on these results, policymakers were recommended to establish consistent national standards for internship to relate higher education with industry requirements. Higher education institutions and stakeholders should establish collaborative internship structures that define clear supervisory roles and incorporate assessment tools to ensure meaningful students' participation. Furthermore, research experts were encouraged to investigate scalable models and examine the long-term impacts of structured internship across different disciplines and institutional contexts, using robust experimental methodologies to strengthen evidence-based policy and curriculum design.

Ethics Approval and consent to Participate

This study was approved by the Universitas Jambi Human Research, through the Ethics Committee, Indonesia with approval number 22/UN21.11/PT.01.00/2025. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee.

REFERENCES

Pazil AHM, Razak RC. Perspectives of Asian employers on graduates' soft skills: A systematic review. Universal Journal of Educational Research. 2019;7(11):2397–405.

Phanphairoj K, Waleeittipat S. Measurement scale of design thinking competency for Thai graduates' 21st century skills. Kasetsart Journal of Social … [Internet]. 2022; Available from: https://so04.tci-thaijo.org/index.php/kjss/article/view/261651

Hadiyanto H, Sulistyo U, Noferdiman N. The Graduates' 21st Century Skills Performance at Workplace: A Challenge and Reflection for Universities in Revolution Industry 4.0 Era [Internet]. Available from: www.techniumscience.com

Franco-Ángel M, Carabali J, ... The internship performance of undergraduate students: Are hard or soft skills more important? Industry and Higher … [Internet]. 2023; Available from: https://journals.sagepub.com/doi/abs/10.1177/09504222221127213

Patacsil FF, Tablatin CLS. Exploring the importance of soft and hard skills as perceived by it internship students and industry: A gap analysis. J Technol Sci Educ. 2017;7(3):347–68.

Salavert R. Coaching: An apprenticeship approach for the 21st century. International Journal of Educational Leadership … [Internet]. 2015; Available from: https://mail.hipatiapress.com/hpjournals/index.php/ijelm/article/view/1104

Loveder P. Australian Apprenticeships: Trends, Challenges and Future Opportunities for Dealing with Industry 4.0. Conference Paper. National Centre for Vocational Education Research … [Internet]. 2017; Available from: https://eric.ed.gov/?id=ED578882

Jenderal D, Tinggi P, Pendidikan K, Kebudayaan D. Buku Panduan Merdeka Belajar-Kampus Merdeka. 2020.

Pratiwi I, Rahmawati D, ... Utilization of Platform Merdeka Mengajar in the Implementation of Merdeka Curriculum. Lectura: Jurnal … [Internet]. 2024; Available from: https://journal.unilak.ac.id/index.php/lectura/article/view/21258

Teng CWC, Lim RBT, Chow DWS, ... Internships before and during COVID-19: experiences and perceptions of undergraduate interns and supervisors. … Work-Based Learning [Internet]. 2021; Available from: https://www.emerald.com/insight/content/doi/10.1108/HESWBL-05-2021-0104

Tsekeris C. Surviving and thriving in the Fourth Industrial Revolution: Digital skills for education and society. Homo virtualis [Internet]. 2019; Available from: https://ejournals.epublishing.ekt.gr/index.php/homvir/article/view/20192

Hadiyanto H, Sulistyo U, Noferdiman N. The Graduates' 21st Century Skills Performance at Workplace: A Challenge and Reflection for Universities in Revolution Industry 4.0 Era. Technium Soc Sci J [Internet]. 2022; Available from: https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/techssj32&section=7

Hahm S. Attitudes and performance of workers preparing for the fourth industrial revolution. KSII Transactions on Internet and Information Systems. 2018;12(8):4038–56.

Barbosa B, Swartz S, Luck S, ... Learning how to work in multicultural teams: Students' insights on Internationalization-at-Home activities. Interpersona: An … [Internet]. 2019; Available from: https://interpersona.psychopen.eu/article/view/378

Harper H, Agar T, Berkes S, Khan R, ... 'Firm' foundations: Restoring apprenticeship‐style learning for today's students. Medical … [Internet]. 2025; Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC12242885/

KONSTANTINOU IRO, ... Understanding The Experience of Mature Students Completing A Degree Apprenticeship. Work Based Learning e … [Internet]. 2021; Available from: https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=20447868&AN=157881496&h=odfR7N3V5kpCAWez%2Fdjy0gVnpwH8Cit1SghZfndjGRBCQ8vHBX3zgux5GFDrcE%2B%2BfhzPhDwHJbJbt48EaGA2Lw%3D%3D&crl=c

An G, Mannes D, Seo D. Voices of Student Apprenticeship: Exploring the Unique Needs and Perspectives of Community College Students. 2024 Fall ASEE Mid-Atlantic Section … [Internet]. 2024; Available from: https://peer.asee.org/voices-of-student-apprenticeship-exploring-the-unique-needs-and-perspectives-of-community-college-students

Zhang Y, Song J. An empirical study on the willingness and behavior of higher vocational college students to participate in modern apprenticeship: based on theory of planned behavior. Sage Open [Internet]. 2024; Available from: https://journals.sagepub.com/doi/abs/10.1177/21582440241252291

Shah A. Improving Students' Programming Processes using Cognitive Apprenticeship Methods. Proceedings of the 2023 ACM Conference on … [Internet]. 2023; Available from: https://dl.acm.org/doi/abs/10.1145/3568812.3603458

Hadiyanto H. Application of Student-Centered Learning in Improving Teaching English as a Foreign Language Students' 21st-Century Skills Performance. Educ Sci (Basel). 2024 Aug 26;14(9):938.

Kovács I. Digital marketing soft skills and university students' perceptions of employability. GiLE Journal of Skills Development [Internet]. 2021; Available from: https://gjsd.gile-edu.org/index.php/home/article/view/6

Kennedy KJ, Pavlova M, Lee JCK. Soft Skills and Hard Values: Meeting Education's 21st Century Challenges [Internet]. books.google.com; 2022. Available from: https://books.google.com/books?hl=en&lr=&id=XXiGEAAAQBAJ&oi=fnd&pg=PT15&dq=21st+century+skills+students+skills+digital+assessment+online+web+based&ots=dx2DNxlBU8&sig=nuNKk95I7_dWCsHOAxfChpvOgVQ

Andreeva E, Khrisanova E, Gunina E, Vishnevskaya M. Psychological and Pedagogical Support for the Formation of Students' Competitiveness in the Educational and Professional Space of the University. 2020;396(Iceder 2019):50–4.

Kemdikbud. Kepmendikbud Nomor 719/P/2020 tentang Pedoman Pelaksanaan Kurikulum pada Satuan Pendidikan dalam Kondisi Khusus. WwwKemdikbudGoId [Internet]. 2020;(022651):9. Available from: https://www.kemdikbud.go.id/main/blog/2020/08/kemendikbud-terbitkan-kurikulum-darurat-pada-satuan-pendidikan-dalam-kondisi-khusus

Lee NE. Skills for the 21st century: A meta-synthesis of soft-skills and achievement. Canadian Journal of Career Development [Internet]. 2018; Available from: https://cjcd.ceric.ca/index.php/cjcd/article/view/80

Ramnanan N. Developing soft skills: Faculty and employer perspectives and recommendations [Internet]. search.proquest.com; 2022. Available from: https://search.proquest.com/openview/f895f904dab73d5317aae670fbcc7d3d/1?pq-origsite=gscholar&cbl=18750&diss=y

Hadiyanto H, Sulistyo U, Noferdiman N. The Graduates' 21st Century Skills Performance at Workplace: A Challenge and Reflection for Universities in Revolution Industry 4.0 Era Hadiyanto. Technium Social Sciences Journal. 2022;32(2000):76–94.

Krisantia I. Students' soft skills, hard skills, and competitiveness (SHC): A suggested model for indonesian higher education curriculum. International Journal of Learning, Teaching and … [Internet]. 2021; Available from: http://ijlter.net/index.php/ijlter/article/view/158

Wibowo TS, Badi'ati AQ, Annisa AA, Wahab MKA, Jamaludin MR, Rozikan M, et al. Effect of Hard Skills, Soft Skills, Organizational Learning and Innovation Capability on Islamic University Lecturers' Performance. Systematic Reviews in Pharmacy. 2020;11(7):556–69.

Vieilandie L, Soloveichuk O, Petryk L, ... Strategies for developing hard skills in higher education students through innovative pedagogical technologies in realistic professional environments. Salud, Ciencia y … [Internet]. 2024; Available from: https://dialnet.unirioja.es/servlet/articulo?codigo=9872393

Sokolova K V, Shchetynnykova OO. 21st century skills: from the classroom to the workplace [Internet]. srd.pgasa.dp.ua; 2021. Available from: http://srd.pgasa.dp.ua:8080/handle/123456789/9899

Fazri A, Muis L, Utami Dewi I. Enhancing Students' 21st Century Competencies: The Impact of Targeted Training on the Development of Essential Soft and Hard Skills. Jurnal Pendidikan Humaniora. 10(04):241–7.

Ismailova T, Ismailov R. EMPLOYEES COMPETITIVENESS ASSESSMENT ON INTERNAL AND EXTERNAL LABOUR MARKETS. International Journal of Advanced Studies. 2017 Feb 21;6(1):18.

Korsakova T. Enhancing Personal Competitiveness of Graduates in Conditions of Development of Polytechnic Education: Self-Competitive Model. In Atlantis Press; 2019.

Hadiyanto H, Noferdiman N, ... Assessing students and graduates soft skills, hard skills and competitiveness. … Journal of Social … [Internet]. 2017; Available from: https://repository.unja.ac.id/18661/

Hadiyanto, Noferdiman, Syamsurizal, Muhaimin, Krisantia I. Students' soft skills, hard skills, and competitiveness (SHC): A suggested model for Indonesian higher education curriculum. International Journal of Learning, Teaching and Educational Research. 2021;20(2):218–34.

Tan C. Lifelong learning through the SkillsFuture movement in Singapore: challenges and prospects. International Journal of Lifelong Education. 2017;36(3):278–91.

Nghia TLH. Building soft skills for employability: Challenges and practices in Vietnam [Internet]. taylorfrancis.com; 2019. Available from: https://www.taylorfrancis.com/books/mono/10.4324/9780429276491/building-soft-skills-employability-tran-le-huu-nghia

Kadir R, Alisyahbana A, Azis F. Analysis of 21st Century Entrepreneurship Skills from the Perspective of Entrepreneurial Education and Training. Indonesian Journal of … [Internet]. 2023; Available from: https://journal.unm.ac.id/index.php/IJOBER/article/view/536

Mays A. Toward the Application of Constructivism and Constructionism to Work-Related Training in Service of the Enhancement of Human Capital Development in …. Online Submission [Internet]. 2015; Available from: https://eric.ed.gov/?id=ED556116

Galloway AB, Hardemon TM. Advancing Entry-Level OTD Students from Novice to Competent with Foundational Skills Using Cognitive Apprenticeship Constructs. Journal of Occupational Therapy Education [Internet]. 2024; Available from: https://eric.ed.gov/?id=EJ1437853

Karataş K, Arpacı İ. The role of self-directed learning, metacognition, and 21st century skills predicting the readiness for online learning [Internet]. earsiv.kmu.edu.tr; 2021. Available from: http://earsiv.kmu.edu.tr/xmlui/handle/11492/5075

Wang H, Wang L, Liu C. Employee competitive attitude and competitive behavior promote job-crafting and performance: A two-component dynamic model. Front Psychol. 2018;9(NOV):1–13.

Novikova N. Competitiveness of students in the culture sphere in the modern educational space. SHS Web of Conferences. 2016;29:02031.

Bailey D, Metituk R, Rakushin-Lee A, Bennett F. Competitiveness in EFL: The Mediating Effect of Competition Self-Efficacy on the Relationship Between Engagement and Self-Determination. English Teaching(South Korea). 2023 Jun 1;78(2):3–28.

Budiman A. Implementation of the Merdeka Belajar Kampus Merdeka (MBKM) Curriculum in PETE Study Program. Journal of Physical and Outdoor Education [Internet]. 2023; Available from: https://jpoe.stkippasundan.ac.id/index.php/jpoe/article/view/221

Gibb S. Soft skills assessment: theory development and the research agenda. International Journal of Lifelong Education. 2014;33(4):455–71.

Murugiah TK. Challenges in Transforming Assessments for 21st Century Skills Development: Lecturers' Perspective. Asian Journal of Education and Training [Internet]. 2020; Available from: https://eric.ed.gov/?id=EJ1242695

Hadiyanto H, Muhaimin M, Noferdiman N, Syamsurizal S, Yuliusman Y, Nazurti N, et al. Fostering Students and Graduate Candidate Level of 21st Century Skills (A survey study conducted at a University). In Atlantis Press; 2019.

Everitt Brian, Landau Sabine. A handbook of statistical analysis using SPSS. Chapman & Hall/CRC; 2004. 320 p.

SPSS SURVIVAL MANUAL [Internet]. Available from: www.allenandunwin.com/spss.htm

Tolmie A, Muijs D, McAteer E. Quantitative methods in educational and social research using SPSS [Internet]. books.google.com; 2011. Available from: https://books.google.com/books?hl=en&lr=&id=0RlFBgAAQBAJ&oi=fnd&pg=PP1&dq=research+method+in+education&ots=SUKh4_v7uH&sig=dzftlVhiSyNpACzoSP2m1W9eLpk

Hair JF. Multivariate data analysis: An overview. International encyclopedia of statistical science [Internet]. 2011; Available from: https://link.springer.com/rwe/10.1007/978-3-642-04898-2_395

Tabachnick BG, Fidell LS, Ullman JB. Using multivariate statistics [Internet]. pearsonhighered.com; 2007. Available from: https://www.pearsonhighered.com/assets/preface/0/1/3/4/0134790545.pdf

Griffin P, Wilson M, Care E. Assessment and teaching of 21st century skills: Research and applications [Internet]. Springer; 2018. Available from: https://link.springer.com/book/10.1007/978-3-319-65368-6

Tavitiyaman P, Tsui B, Ng PML. Effect of hospitality and tourism students' perceived skills on career adaptability and perceived employability. Journal of Hospitality &Tourism … [Internet]. 2025; Available from: https://www.tandfonline.com/doi/abs/10.1080/10963758.2023.2200003

Dishon G, Gilead T. Adaptability and its discontents: 21st-century skills and the preparation for an unpredictable future. British Journal of Educational Studies [Internet]. 2021; Available from: https://www.tandfonline.com/doi/abs/10.1080/00071005.2020.1829545

Haryanto PC, Arty IS. The application of contextual teaching and learning in natural science to improve student's HOTS and self-efficacy. J Phys Conf Ser [Internet]. 2019; Available from: https://iopscience.iop.org/article/10.1088/1742-6596/1233/1/012106/meta

Leibowitz B, Bozalek V, Kahn P. Theorising Learning to Teach in Higher Education. Theorising Learning to Teach in Higher Education. 2016;23(3):1–237.

Chu SKW, Reynolds RB, Tavares NJ, Notari M, ... 21st century skills development through inquiry-based learning from theory to practice [Internet]. Springer; 2021. Available from: https://link.springer.com/content/pdf/10.1007/978-981-10-2481-8.pdf

Vaccari V, Gardinier MP. Toward one world or many? A comparative analysis of OECD and UNESCO global education policy documents. … Education and Global Learning [Internet]. 2019; Available from: https://journals.uclpress.co.uk/ijdeg/article/id/1946/

Rohman A, Muhtamiroh S, Imron A, Miyono N. Integrating traditional-modern education in madrasa to promote competitive graduates in the globalization era. Cogent Education [Internet]. 2023; Available from: https://www.tandfonline.com/doi/abs/10.1080/2331186X.2023.2268456

Malette N, Robson K, Thomson E. Academic interests mismatch: undergraduate to apprenticeship transfer among Canadian students. Journal of Vocational Education … [Internet]. 2024; Available from: https://www.tandfonline.com/doi/abs/10.1080/13636820.2022.2126879

Joynes C, Rossignoli S, Amonoo-Kuofi EF. 21st Century Skills: evidence of issues in definition, demand and delivery for development contexts [Internet]. opendocs.ids.ac.uk; 2019. Available from: https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/14674

Barnd SMM. The Effect of Globalization and Multinational Corporations on Development of 21st-Century Skills and Education In Science, Technology, Engineering, and … [Internet]. search.proquest.com; 2017. Available from: https://search.proquest.com/openview/ee79d5f3ac4c38c26380646b9d87d6a9/1?pq-origsite=gscholar&cbl=18750

