



LABOR CURRICULUM REFORM AND LABOR LITERACY DEVELOPMENT IN HIGHER EDUCATION: A QUASI-EXPERIMENTAL STUDY BASED ON THE THREE-WIDE EDUCATION FRAMEWORK

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Abstract:

The curriculum-based development of labor education in higher education requires a shift from general task-based arrangements to more systematic practice-oriented pedagogical design. Drawing on the Three-wide Education Framework, this study redesigned a university labor curriculum and evaluated its effectiveness using a pretest-posttest control-group quasi-experimental design. The study involved 270 valid student participants from three undergraduate programs—administrative management, e-commerce, and biology education—with 135 students in the experimental group and 135 in the control group. The experimental group received a reformed course that integrated optimized learning objectives, reconstructed practice tasks, strengthened reflection and feedback, and diversified assessment, whereas the control group followed conventional instruction. The results showed that the two groups were comparable in labor literacy before the intervention. After the course, the experimental group scored significantly higher than the control group in both posttest scores and value-added scores across four dimensions: labor cognition, labor competence, labor habits, and labor responsibility. The findings provide empirical evidence for the design of labor education curricula, practice-oriented course reform, and student development assessment in higher education. The study also demonstrates the value of combining pretest-posttest comparison with value-added analysis in evaluating practice-oriented curriculum reform.

Keywords: Three-wide Education; labor education; curriculum reform; labor literacy; value-added evaluation

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1. Introduction

In recent years, access to higher education has continued to expand. However, degree attainment does not necessarily mean that students' practical competence and broader developmental capacities improve at the same pace. OECD (2025) reported that tertiary attainment among young adults in OECD countries has reached 48%, while adult literacy and numeracy have stagnated or declined in many countries. The World Economic Forum (2025) also projected substantial changes in the global employment structure by 2030. Technological skills will be in growing demand, but human capabilities such as analytical thinking, resilience, leadership, and collaboration will remain essential. These trends raise a clear challenge for higher education. Curriculum reform should not focus only on knowledge transmission or credential attainment. It also needs to create learning experiences that develop students' practical competence, responsibility, and capacity for sustained growth.

Against this background, labor curricula can be understood as practice-oriented curricula with broader developmental purposes. In this study, the Three-wide Education framework refers to whole-staff participation, whole-process education, and all-round coordination in student development. Labor curricula differ from narrow vocational training. Labor education emphasizes students' engagement in real or near-real labor contexts, where explanation, project-based practice, hands-on experience, and reflection are used to foster students' understanding of the value of labor, their ability to solve practical problems, and their sense of social responsibility. In higher education, labor education may be delivered as an independent course, but it can also be integrated with disciplinary learning, extracurricular activities, and off-campus practice. The key issue in labor curriculum reform is therefore not simply to increase the number of practical activities. Rather, labor practice should be connected with students' academic backgrounds, campus life, and social participation so that labor literacy can develop across multiple learning contexts. Existing research has shown that labor education is positively associated with students' academic performance, cognitive ability, and non-cognitive development (Li & Lu, 2023). However, much of the existing research on labor education focuses on basic education or family education. Empirical evidence remains limited on how curriculum-based labor education in universities contributes to undergraduate students' labor literacy.

From the perspective of curriculum reform, the effectiveness of labor education depends on systematic course design. The question is not only what labor tasks students complete, but also what is taught, how students participate, and how learning is assessed. Research in higher education has shown that active learning, experiential practice, and reflective feedback can improve students' learning outcomes and broader capabilities. Ashwin (2025) also suggested that undergraduate education can become transformational when students engage meaningfully with knowledge rather than merely receive it. In a meta-analysis of courses in the humanities and social sciences, Kozanitis and Nenciovici (2023) found that active learning produced stronger learning

outcomes than traditional lecturing. This finding supports a shift in university labor education from one-way instruction and task completion toward student participation, practical experience, project-based learning, and reflection.

Labor literacy is both multidimensional and developmental. Changes in labor cognition, labor competence, labor habits, and labor responsibility are unlikely to be fully captured through a single course assessment or one-time practice activity. They are more likely to emerge gradually through continued participation, feedback, and reflection. Accordingly, assessment in labor education should move beyond single outcome-based evaluation and pay closer attention to students' developmental changes over time. Studies in higher education have shown that formative assessment and feedback can support learning improvement, although their effectiveness depends on assessment task design, feedback quality, and students' engagement with feedback (Alt et al., 2023). Research on learning analytics further suggests that process-based learning data can support feedback practices by helping teachers and students understand learning processes, identify problems, and adjust learning behaviors (Banihashem et al., 2022). For labor curricula, combining pretest and posttest measures with process records and value-added evaluation may provide a clearer picture of students' development relative to their starting points.

To address these gaps, this study examines the reform of a university labor curriculum. It evaluates the effect of the reform on students' labor literacy using a pretest-posttest control-group quasi-experimental design. The study involved students from three undergraduate programs: administrative management, e-commerce, and biology education. It compared the experimental and control groups before and after the course across four dimensions of labor literacy: labor cognition, labor competence, labor habits, and labor responsibility. Value-added scores were further used to examine whether the reformed course produced greater developmental gains than conventional instruction. Specifically, this study addresses two research questions: first, whether the reformed university labor curriculum significantly improves students' labor literacy; and second, whether the reformed course generates greater value-added effects than conventional instruction. The findings provide empirical evidence for practice-oriented curriculum development, student development assessment, and the evaluation of curriculum reform in higher education.

2. Literature Review

2.1 Labor Education and Practice-Oriented Student Development

In higher education, labor education can be understood as a practice-oriented form of curriculum. It promotes student development through labor, service, cooperation, and reflection. Unlike narrow vocational training, labor education does not simply teach work-related skills. It aims to help students understand the value of labor, improve practical competence, form stable labor habits, and cultivate social responsibility. Based on evidence from the Chinese educational context, Li and Lu (2023) found that labor

education is positively associated with students' academic performance, cognitive ability, and non-cognitive development.

Labor education also shares a developmental logic with service learning, work-integrated learning, and other practice-oriented forms of higher education. These areas of research show that student development is shaped not only by classroom knowledge, but also by authentic tasks, social interaction, and reflective experience. Studies on service learning have examined how students develop empathy, responsibility, and civic engagement through community service and social practice. Systematic and bibliometric reviews show that service learning places students in real social contexts, where service and reflection support social-emotional and responsibility-related development (Gordon et al., 2022; Martínez-Heredia et al., 2022). Research on work-integrated learning similarly cautions against reducing practice-based learning to employability training or work readiness alone (Björck, 2021). Instead, practice-based learning can be understood as a process through which students connect knowledge, competence, and professional development across curricular, co-curricular, and extracurricular experiences (Jackson & Bridgstock, 2021).

These studies cannot replace research on labor education itself, but they provide a useful lens for understanding university labor courses. For such courses, the key question is not whether students complete labor tasks. The more important issue is whether structured practice and reflection can support the development of labor literacy. However, English-language empirical research on university labor education remains limited, particularly studies that evaluate course reform through dimensions such as labor cognition, labor competence, labor habits, and labor responsibility.

2.2 Active Participation, Reflective Feedback, and Labor Curriculum Reform

The educational value of labor education depends largely on whether students are genuinely engaged in the learning process. Research on active learning provides an important basis for this view. In a meta-analysis of courses in the humanities and social sciences, Kozanitis and Nenciovici (2023) found that active learning led to better student learning outcomes than traditional lecturing. Course effectiveness, therefore, depends not only on content delivery, but also on students' meaningful participation in tasks, interaction, and reflection. In labor education, when students merely complete required activities, labor can easily be perceived as an external obligation. Labor experiences are more likely to become meaningful learning experiences when they are connected with disciplinary learning, campus life, and social participation.

The quality of student participation depends on both authentic tasks and learning support. Research on active learning, self-regulated learning, course design, and video-based learning contexts shows that participation does not occur automatically. It is shaped by learning context, task organization, interaction, goal setting, and process guidance (Levinsson et al., 2024; Seo et al., 2021; Theobald, 2021). Practice-oriented courses therefore need more than activity settings. They also require clear objectives,

structured tasks, process guidance, and feedback arrangements that help students sustain participation and reflect on their performance.

In labor education, reflective feedback links labor experience with labor literacy. Practice tasks provide the context for students' labor participation, but students' development of labor value understanding, practical competence, behavioral habits, and responsibility also depends on opportunities to revisit the labor process, interpret their experiences, and adjust their behavior. Through practice journals, group discussion, teacher feedback, and presentation of outcomes, fragmented labor activities can become learning experiences that are understandable, expressible, and improvable. Labor curriculum reform therefore needs to move beyond what students are asked to do and focus more on how they participate, reflect, and improve throughout the labor process.

2.3 Process-Based Assessment, Value-Added Analysis, and Research Gaps

Labor literacy has both visible and less visible dimensions. Its development is unlikely to be fully captured by a single course assessment or one-time practice activity. Labor cognition, labor competence, labor habits, and labor responsibility are formed gradually through continued participation, feedback, and reflection. For this reason, the evaluation of labor curriculum reform should consider not only students' final performance, but also how they develop relative to their own starting points.

Research on formative assessment and feedback provides a basis for this process-based view. A shared argument in this literature is that feedback should not be treated as a one-way judgment of student performance. It needs to be embedded in specific tasks, assessment criteria, interaction, and subsequent improvement. Studies on online peer feedback, feedback design, formative assessment, and learning analytics indicate that the value of feedback lies not merely in providing evaluative information, but in helping students understand their performance, identify directions for improvement, and adjust their behavior in later tasks (Alt et al., 2023; Banihashem et al., 2022; Gao et al., 2024; Morris et al., 2021; Schluer & Brück-Hübner, 2025). This logic fits closely with labor literacy assessment. Just as formative feedback helps students understand their academic performance, practice records, reflection journals, and multi-source feedback can help students recognize their developmental changes in labor cognition, competence, habits, and responsibility. Practice records, reflection journals, teacher observations, parent feedback, and feedback from social practice sites are not only process materials; they are also evidence for understanding changes in students' labor literacy.

Student engagement research further reminds us that participation should not be equated with attendance or task completion. It involves behavioral, cognitive, and emotional dimensions (Salas-Pilco et al., 2022). Accordingly, evaluating labor curriculum reform requires attention to whether students understand the value of labor, develop practical problem-solving competence, form sustained labor habits, and demonstrate responsibility. This is particularly important in natural-class course reform settings, where full random assignment is often difficult to achieve. A pretest–posttest control-

group design, together with value-added score comparison, can offer a clearer picture of students' development relative to their initial levels.

Taken together, existing research provides an important foundation for understanding labor curriculum reform, but several gaps remain. First, empirical studies on university labor education are still limited. Second, although active learning, service learning, and work-integrated learning offer useful reference points, they cannot fully substitute for research on the specific dimensions of labor education. Third, the evaluation of labor curriculum reform needs to consider both outcome differences and students' developmental gains. To address these gaps, this study develops a reform pathway centered on redesigned course objectives, reconstructed practice tasks, strengthened reflective feedback, and diversified assessment. It then uses a pretest–posttest control-group quasi-experimental design to examine the effects of the reformed course on students' labor cognition, labor competence, labor habits, and labor responsibility.

3. Material and Methods

This study used a pretest–posttest control-group quasi-experimental design to examine the effect of a reformed university labor curriculum on students' labor literacy. Because labor education courses in Chinese universities are usually organized by intact classes, full random assignment was not feasible in the actual teaching context. Intact classes were therefore used as the unit of grouping. Classes receiving the reformed course were assigned to the experimental group, while classes receiving conventional instruction were assigned to the control group.

Participants were drawn from six intact classes in three undergraduate programs: administrative management, e-commerce, and biology education. A total of 270 valid student responses were included in the analysis, with 135 students in the experimental group and 135 in the control group. Students ranged in age from 18 to 20 years. The sample included 121 male and 149 female students. The numbers of students from administrative management, e-commerce, and biology education were 110, 90, and 70, respectively. Before and after the course, both groups completed the same labor literacy scale. Course effects were evaluated by comparing pretest scores, posttest scores, and value-added scores.

The experimental group received the reformed labor curriculum. The reform included redesigned course objectives, reconstructed practice tasks, strengthened reflection and feedback, and diversified assessment. The course objectives were organized around four dimensions of labor literacy: labor cognition, labor competence, labor habits, and labor responsibility. Practice tasks were designed according to the characteristics of each program. Administrative management students focused on public service, organizational cooperation, and social governance-related practice. E-commerce students worked on digital service, business operation, and social practice tasks. Biology education students engaged in educational service, science popularization, and campus

ecology-related activities. During the course, students in the experimental group participated in thematic learning, case discussion, practice tasks, reflection journals, group discussion, and presentation of outcomes. They also received feedback from teachers, peers, parents, and social practice sites. The control group followed conventional labor education instruction, which mainly included labor education lectures, routine labor tasks, and course-end evaluation. It did not systematically include program-related practice tasks, continuous reflection journals, or multi-source feedback. To improve consistency in implementation, course objectives, practice tasks, assessment requirements, and data collection procedures were designed before the course began. The experimental and control groups completed the course within the same teaching period, and the pretest and posttest were administered at comparable time points. The use of intact classes increased ecological validity. However, because the sample came from a single university, the findings are most applicable to labor education contexts with similar course conditions and student backgrounds.

3.1 Instrument

Labor literacy was used as the main outcome indicator of the course reform. Based on the objectives of university labor education and previous research on labor literacy, this study divided labor literacy into four dimensions: labor cognition, labor competence, labor habits, and labor responsibility. The scale dimensions and item design were adapted to the content of the course reform. Research on practice-oriented learning, service learning, student engagement, and formative assessment in higher education also provided theoretical support for the scale design (Alt et al., 2023; Gordon et al., 2022; Li & Lu, 2023).

The instrument used a five-point Likert scale, ranging from “strongly disagree” to “strongly agree.” Labor cognition measured students’ understanding of the value and meaning of labor. Labor competence measured students’ ability to complete labor tasks, solve practical problems, and cooperate with others in labor activities. Labor habits measured students’ initiative, continuity, and behavioral stability in labor participation. Labor responsibility measured students’ rule awareness, responsibility awareness, and sense of social responsibility in labor practice. The final scale included 16 items, with four items for each dimension. Both the experimental and control groups completed the same scale before and after the course to ensure comparability between the pretest and posttest results.

In addition to questionnaire data, the study collected process materials, including students’ practice records, reflection journals, classroom performance, outcome presentations, teacher observation records, parent evaluations, feedback from social practice sites, and interview materials. These materials were used to support the interpretation of the quantitative findings. They did not replace the statistical tests.

3.2 Validity and Reliability Testing

Before the formal analysis, the applicability and reliability of the instrument were examined. First, teachers with experience in labor education reviewed the content validity of the scale items. They evaluated whether the items reflected the four dimensions of labor cognition, labor competence, labor habits, and labor responsibility, and whether the wording was appropriate for university students. Some items were revised according to their feedback to improve consistency between the scale and the course objectives.

The internal consistency of the scale was then tested using the pretest data. The Cronbach's α values for labor cognition, labor competence, labor habits, and labor responsibility were 0.85, 0.91, 0.87, and 0.89, respectively. These results indicated that the scale had acceptable internal consistency and could be used to measure changes in students' labor literacy.

3.3 Data Analysis

SPSS was used for quantitative data analysis. First, independent-samples t-tests were conducted on the pretest scores of the experimental and control groups to examine baseline equivalence across the dimensions of labor literacy. Cohen's d was calculated as the effect size. Second, paired-samples t-tests were used to examine within-group changes from pretest to posttest in both groups. Third, independent-samples t-tests were conducted on the posttest scores to compare group differences after the course.

To further examine students' development relative to their starting points, value-added scores were calculated for each student by subtracting the pretest score from the posttest score for each dimension. Independent-samples t-tests were then used to compare the value-added scores of the experimental and control groups. All statistical tests were two-tailed. The significance level was set at $p < 0.05$.

3.4 Ethical Considerations

This study was conducted in a real course teaching context, and all students participated in the labor education course as part of normal learning activities. Questionnaire data and course process materials were used only for curriculum reform research and teaching effectiveness analysis. Before analysis, all identifiable information was anonymized, and the results were reported only in aggregate form.

4. Results and Discussion

4.1 Baseline Equivalence Test

Before the course reform was implemented, independent-samples t-tests were conducted on the pretest scores of the experimental and control groups. The purpose was to examine whether the two groups were comparable at baseline. The results showed no significant differences between the two groups in labor cognition, labor competence, labor habits, or

labor responsibility. The effect sizes were also small. This indicates that the two groups had good baseline equivalence before the course intervention.

More specifically, none of the group differences reached statistical significance, with all *p* values greater than 0.05. The absolute values of Cohen's *d* were all below 0.20. These results provide a reasonable basis for comparing the effects of the course reform in the subsequent analysis.

Table 1: Baseline Equivalence Test of Labor
Literacy Between the Experimental and Control Groups

Dimension	Experimental Group M(SD)	Control Group M(SD)	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
Labor cognition	2.97(0.29)	2.96(0.33)	0.339	0.735	0.041
Labor competence	3.08(0.41)	3.15(0.53)	-1.163	0.246	-0.142
Labor habits	3.00(0.33)	3.02(0.33)	-0.413	0.680	-0.05
Labor responsibility	3.13(0.44)	3.18(0.45)	-0.925	0.356	-0.113

Note: M = mean; SD = standard deviation; * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001. The same applies below.

4.2 Changes in Labor Literacy After the Course

After the course, the posttest scores of the two groups were compared across the four dimensions of labor literacy. The experimental group scored significantly higher than the control group in labor cognition, labor competence, labor habits, and labor responsibility. This indicates that the reformed labor curriculum had a positive effect on students' labor literacy.

As shown in Table 2, the mean scores of the experimental group were higher than those of the control group in all four dimensions, and all group differences were statistically significant at *p* < 0.001. The differences were especially evident in labor habits and labor responsibility. The reform therefore appears to have influenced not only students' understanding of labor value and practical competence, but also their sustained participation, behavioral stability, and sense of responsibility.

Table 2: Comparison of Posttest Scores Between the Experimental and Control Groups

Dimension	Experimental Group M(SD)	Control Group M(SD)	<i>t</i>	<i>p</i>
Labor cognition	3.58(0.36)	3.36(0.42)	4.697	< 0.001
Labor competence	3.56(0.43)	3.37(0.45)	3.639	< 0.001
Labor habits	3.66(0.37)	3.27(0.33)	9.206	< 0.001
Labor responsibility	3.70(0.33)	3.36(0.40)	7.606	< 0.001

4.3 Comparison of Value-Added Scores

To examine whether the course reform produced gains beyond students' initial levels, value-added scores were calculated for each student. The value-added score was defined as the posttest score minus the pretest score for each dimension. The results showed that the experimental group had significantly higher value-added scores than the control group in labor cognition, labor competence, labor habits, and labor responsibility.

As shown in Table 3, all differences in value-added scores were statistically significant at $p < 0.001$. Consistent with the posttest results, the largest advantages of the experimental group appeared in labor habits and labor responsibility. This shows that the effect of the reformed course was not limited to higher final scores. It was also reflected in greater developmental gains from students' own starting points.

Table 3: Comparison of Value-Added Scores Between the Experimental and Control Groups

Dimension	Experimental Group M(SD)	Control Group M(SD)	t	p
Labor cognition	0.61(0.42)	0.40(0.50)	3.782	< 0.001
Labor competence	0.48(0.50)	0.22(0.16)	5.781	< 0.001
Labor habits	0.66(0.33)	0.25(0.21)	12.27	< 0.001
Labor responsibility	0.57(0.31)	0.18(0.28)	10.843	< 0.001

4.4 Discussion

The results show that the reformed labor curriculum significantly improved students' labor literacy. The experimental group not only scored higher than the control group after the course, but also showed greater value-added gains. The effect of the reform was therefore reflected in both final learning outcomes and students' development relative to their initial levels.

The improvement in labor cognition and labor competence indicates that practice-oriented course design helped students move from abstract understanding to concrete experience. If labor education relies mainly on lectures and routine tasks, students may understand the importance of labor but still lack opportunities to develop stable practical competence in real contexts. In this study, labor tasks were connected with disciplinary learning, campus life, and social participation. This allowed students to understand the value of labor through more concrete tasks and to improve their competence through problem solving and cooperation. This finding is consistent with research on active learning in higher education. Kozanitis and Nenciovici (2023) found that active learning produced stronger learning outcomes than traditional lecturing. The present study extends this insight to labor education by showing that active participation and program-related practice tasks can also support student development.

The stronger value-added effects in labor habits and labor responsibility are also important. They indicate that the reform did more than improve students' knowledge or understanding. It helped strengthen behavioral stability and students' sense of responsibility. Research on service learning has shown that participation in real social service and community practice can support students' emotional, empathic, and responsibility-related development (Gordon et al., 2022). The present findings are consistent with this view. When students participate continuously in concrete practice and respond to real task requirements, they are more likely to translate their understanding of labor value into habits and responsibility.

Reflective feedback and diversified assessment may have been important conditions for these effects. Students in the experimental group completed practice

records, reflection journals, group discussions, and outcome presentations. They also received feedback from teachers, peers, parents, and social practice sites. These arrangements helped students attend to their own performance and transform labor experience into learning experience. Research on formative assessment and learning analytics emphasizes that feedback is valuable not only because it evaluates performance, but because it helps students understand learning processes, identify directions for improvement, and adjust later behavior (Alt et al., 2023; Banihashem et al., 2022). Keller et al. (2024) further noted that students' use of feedback is related to self-efficacy, perceived usefulness of feedback, and learning goals. In labor education, feedback is therefore more likely to support labor literacy when it is connected with students' reflection, goal understanding, and practical improvement.

The findings also highlight the value of using value-added evaluation in curriculum reform studies. Posttest scores can show differences in final performance, but they do not fully capture how much students have developed from their original levels. By combining pretest scores, posttest scores, and value-added scores, this study provides a clearer view of students' developmental changes. This is especially useful in quasi-experimental studies based on intact classes, where full random assignment is difficult. In such contexts, value-added analysis can complement baseline equivalence testing and strengthen the interpretation of course reform effects.

Overall, the findings support the view that university labor education reform should not stop at adding labor tasks or requiring students to complete activities. A more effective approach is to clarify course objectives, design program-related practice tasks, strengthen reflective feedback, and improve assessment methods. As a practice-oriented course, labor education is valuable not only because it organizes students to participate in labor. Its deeper value lies in using structured tasks, continuous feedback, and diversified assessment to promote students' understanding, practical competence, labor habits, and responsibility.

5. Recommendations

Based on the findings, universities should develop labor education as a practice-oriented curriculum rather than treat it as a set of labor tasks or course requirements. Course objectives need to be clearly aligned with the four dimensions of labor literacy: labor cognition, labor competence, labor habits, and labor responsibility. Program-related practice tasks, reflection journals, group discussion, outcome presentations, and teacher feedback can help students turn labor experience into an understanding of labor value, practical problem-solving competence, and a more stable sense of responsibility. This recommendation is consistent with research on active learning and course design, which highlights the importance of meaningful participation and well-structured learning environments (Kozanitis & Nenciovici, 2023; Levinsson et al., 2024).

In course implementation, universities can design differentiated labor practice tasks according to students' disciplinary backgrounds. For example, administrative

management students may work on public service and organizational cooperation. E-commerce students may engage in digital service and platform operation. Biology education students may participate in science popularization and campus ecology-related practice. Teachers also need to give greater attention to reflection and feedback after labor practice. Student self-assessment, peer discussion, parent evaluation, and feedback from social practice sites can be included in the assessment process. Such assessment should not be used only to judge whether students have completed tasks. It should also help students understand their labor process, participation quality, and directions for improvement (Alt et al., 2023; Gao et al., 2024). Compared with a single summative assessment, the combination of pretest, posttest, and value-added evaluation can better capture students' development relative to their initial levels.

Future research could expand the sample to include different regions, types of universities, and academic programs. This would help test the stability and applicability of labor curriculum reform across contexts. Longitudinal designs could also be used to examine the long-term effects of labor education on students' labor habits and sense of responsibility. In addition, future studies may compare the effects of different types of labor tasks, such as campus labor, family labor, social service labor, and program-related labor. Interviews, classroom observation, and analysis of students' reflective texts could further explain the learning processes behind changes in labor literacy.

6. Conclusion

This study used a pretest–posttest control-group quasi-experimental design to examine the effect of a reformed university labor curriculum on students' labor literacy. Before the course, there were no significant differences between the experimental and control groups across the dimensions of labor literacy. This confirmed baseline equivalence between the two groups. After the course, the experimental group scored significantly higher than the control group in labor cognition, labor competence, labor habits, and labor responsibility. The reformed course therefore had a positive effect on students' labor literacy.

The value-added analysis provided further evidence of this effect. The experimental group showed significantly greater gains than the control group in all four dimensions. The gains were especially notable in labor habits and labor responsibility. This indicates that the course reform not only helped students understand the value of labor and improve practical competence, but also supported the development of more stable labor participation habits and a stronger sense of responsibility.

Overall, the study supports the systematic development of university labor education as a practice-oriented curriculum. A reform pathway centered on redesigned course objectives, reconstructed practice tasks, strengthened reflective feedback, and diversified assessment can provide students with more continuous, concrete, and reflection-supported labor learning experiences. These experiences, in turn, promote the broader development of labor literacy. The study also shows that combining pretest,

posttest, and value-added analysis can help identify the actual effects of labor curriculum reform on student development.

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Conflict of Interest Statement

The author declares no conflicts of interest.

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