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An Inclusive Work-Based Learning Management Model for Enhancing Work Readiness Among Students With Disabilities in a Special Education High School of East Java Province, Indonesia

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Abstract. The unemployment rate among graduates of special education high schools indicates that the relevance of special education to community needs remains low. Students' readiness for entering the workforce needs to be addressed, particularly through transition programs, so that graduates can meet the demands of the workforce. This study aims to develop a skills learning management model that is integrated with industrial work practices in an inclusive and work readiness-based manner in Special Senior High Schools in East Java Province, Indonesia. This study uses a Research and Development approach that refers to the 4-D framework with stages consisting of Define (preliminary study), Design (model development), Develop (validation and testing), and Disseminate (model refinement and dissemination). The preliminary study involved 30 participants who were evaluated through questionnaires, observations, interviews, and focus group discussions. The development phase involved experts in education management and special education. The model's pilot phase included a limited pilot with 30 participants, a small pilot with 45 participants, and an expanded pilot with 53 participants. The results showed that the addition of collaborative functionality was proved to support increased job readiness in students with disabilities. Collaboration enabled schools not only to teach technical skills in the classroom but also ensure the relevance of learning to workplace needs by placing students in a work environment. One of the novelties of this model is its explicit emphasis on student job readiness as the final outcome. This model combines hard skills (technical skills relevant to the vocational field) and soft skills (discipline, communication, work resilience, and quality orientation) to support student success in real-world work environments.

Keywords: work-based learning; students with disabilities; special education; collaboration; management model; transition program.

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1. Introduction

Students' readiness to enter the workforce needs to be prepared so that graduates can meet the demands of the job market in line with developmental demands. Therefore, post-secondary transition programs for students are crucial, starting in school, in accordance with their character and educational level. Paid work experience before graduation is one of the strongest predictors of career success for young people with disabilities and therefore warrants further emphasis in practice (Taylor et al., 2025). Some of the advantages of employing people with disabilities include being more punctual, reliable, and meticulous in their work, thereby increasing company productivity (Lindsay et al., 2018).

Transition programs are not only for typical students but also for students with disabilities. The transition from school to post-school life can be very difficult for most students with disabilities (Almalky et al., 2020). Students with disabilities face challenges during the transition from school to the workplace. Policy gaps, limited professional training, and resource constraints are barriers to equitable implementation even though technology improves access and transition success (Monyarela et al., 2025). The most frequently identified challenges faced by people with disabilities are related to modification, attitudinal barriers, failure to be an advocate for themselves, failure to disclose disabilities to employers or schools, inadequate career preparation and planning, discrimination, and social isolation (Eseadi, 2024).

The main challenge people with disabilities face in finding and maintaining employment is disclosing their condition to employers and requesting accommodations (Lindsay et al., 2018). Discrimination in the workplace is often caused by a lack of knowledge and experience in working with people with disabilities (Mazzotti et al., 2021). To bridge the gap in perceptions of transition, strategies are needed, including increasing teacher participation in professional development activities, enhancing collaborative efforts, and developing a legal framework for transition (Ookeditse, 2025).

The independent curriculum implemented in special schools is 50% elective skills and 50% academic. This means that the allocated time for skills learning is decreasing. The skills provided are limited to hard skills, whereas the development of soft skills is very important for the job market (Mawonedzo, 2023). Skills are one of the most empowering pathways for people with special needs to escape dependency, earn a living, and improve their quality of life (Arumugam et al., 2022).

The unemployment rate among special education school graduates indicates that the relevance of special education to community needs remains low. The skills learning model is limited to hands-on, hands-on learning in schools (Andini et al., 2024). Therefore, industry is expected to support schools by providing practical tools tailored to field needs (Affandi et al., 2025). Learning by doing is a method considered to have a positive influence on skills learning for students with disabilities, as the most effective learning for them begins with the concrete and progresses to the abstract (Surahman & Fauziati, 2021). Vocational schools

intensify practical learning as a key for strengthening graduates' employability skills (Prianto et al., 2025).

Students with disabilities are capable of performing semi-skilled work, provided employers are willing to accept them. Special education schools should recommend implementing work skills programs through internships. Students with disabilities must bridge the gap between their educational experiences and the realities after graduation through transition programs. All parties, including teachers and the government, must contribute to improving post-school employment for students with disabilities (Binmahfooz, 2022). Successful transition is dependent on effective collaboration among different levels of the socio-ecological framework (Šiška et al., 2025).

Internships in the technology industry and entrepreneurship can enhance students' practical knowledge, skills, and behavior (Suranto et al., 2025). It is important to align oneself with industry needs, cultivate soft skills, and develop a lifelong learning mentality (Suppiah et al., 2025). Internship programs play a vital role in bridging the gap between school learning and industry needs (Megasari, 2025). This requires collaboration between academic institutions, disability insurance companies, and relevant government agencies to build a robust guidance system (Khasawneh, 2025).

The urgency problems, namely: empirical conditions. Based on documentation from special education schools in Trenggalek Regency, East Java Province, in 2023, only 6.67% of graduates were employed, while the remaining 93.33% were unemployed. Nationally, according to the Central Statistics Agency, only 44.55% of working-age people with disabilities were employed (Siregar et al., 2021). Skills learning is solely practice-based in schools and has not been integrated with the world of work and industry. The skills curriculum has not systematically developed soft skills. The role of stakeholders (parents, the world of work and industry, and the government) has not been fully involved. Attitudinal factors of parents, teachers, and students, along with accommodations like universal design, play crucial roles (Mashwama & Omodan, 2024).

These deficits have resulted in graduates of special education schools being unprepared for work and lack self-confidence, Society has not provided opportunities for students with disabilities to work. The number of unemployed students with disabilities continues to increase. Hence, the development of an integrated skills learning management model for inclusive industrial work practices based on work readiness, by adding the Collaborating function as a new scientific contribution in skills learning management in special education high schools is important.

1.1 Research Objectives

The objectives of this research are divided into two, namely theoretical and practical objectives.

1.1.1 Theoretical objectives

1. To develop a learning management model for integrated skills and inclusive industrial work practices based on work readiness as a conceptual contribution to the development of special education,
2. To review and assess the feasibility of a learning management model for integrated skills and inclusive industrial work practices based on work readiness with expert and practitioner validation to strengthen the model theoretically.

1.1.2 Practical objectives

1. To implement a learning management model for integrated skills and inclusive industry work practices based on work readiness in the context of Special Education High Schools,
2. To provide practical guidance for teachers, special education practitioners, and stakeholders in implementing a learning model that supports the work readiness of students with disabilities.

2. Literature Review

2.1 Learning Management Skills

Leadership is a crucial contributor to effective professional networks in education. In efforts to improve schools and systems, leaders at all levels are challenged to collaborate and build networks to ensure the best possible outcomes for students (Azorín et al., 2020). Work-Integrated Learning (WIL) through special programs can be used to combine academic knowledge with practical experience (Van & Takuro, 2024). The transition of young people to independence is seen as crucial. To date, no transition program or initiative offers a comprehensive solution. Facilitating a successful transition for individuals with disabilities, including work-based learning and internships, is essential because providing practical experience prepares individuals for the workforce (Šiška et al., 2025).

Implementing child-friendly principles such as inclusive spaces, mental health support, and zero-tolerance policies against bullying plays a significant role in maintaining student engagement and attendance. However, challenges such as limited resources, inadequate supervision during breaks, and uneven parental involvement persist. Ultimately, academic improvement is found to be most successful when leadership, teaching quality, and school climate work together (Fitanto, 2025).

It's important to help transitioning youth plan their time commitments early in high school to ensure academic and internship requirements are met. Implementing internship programs requires collaborative relationships with various partners (Avellone et al., 2023). Career preparation and support activities for young people are facilitated by case managers to provide real-world work experience. Relatively simple and cost-effective strategies include job search, application preparation, and interview support (McCormick et al., 2021).

Meaningful work is a critical component of community inclusion and the formation of a positive and stable identity for individual with disabilities (IWDs), particularly for youth and young adults entering the workforce. A better

understanding of employer perspectives on hiring IWD can inform training, career readiness skills, and workforce development strategies (Reardon et al., 2025).

2.2 Inclusive Industrial Internship and Job Readiness

Teachers' perceptions of barriers to work-based learning experiences (WBLE) in schools and communities may influence whether they provide these experiences to students with disabilities (Rooney-Kron & Dymond, 2021). Therefore, the curriculum should explicitly explain how activities align with targeted learning outcomes to increase perceived effectiveness (Jackson et al., 2024). It is important to incorporate structured transition planning into the curriculum, invest in staff capacity building, and strengthen relationships with families, employers, and community networks (Zainal & Zahri, 2025).

Evidence suggests that internships serve not only as platforms for acquiring technical skills, encompassing software proficiency, digital problem solving, and platform adaptation, but also as complex learning spaces involving affective and ethical learning (Musa et al., 2025). There is a need to increase WIL participation and expand its provision, including introducing more inclusive WIL practices to support diverse student groups (Jackson & O'Connor, 2026).

Non-academic learning and career development greatly benefited by participation in the WIL program, particularly the support of work supervisors and academics in applying general skills to the workplace (Marijani et al., 2023). Overall, the WBL model design for students with disabilities in vocational schools elicited positive responses regarding understanding and encouraged students with disabilities to engage in learning at the vocational level (Suyitno et al., 2025). Transition-age youth's employment history and ways to enhance cultural competency are important considerations for vocational rehabilitation professionals (Hartman et al., 2025).

3. Methodology

This research uses a Research and Development (R&D) approach which refers to the 4-D framework (Thiagarajan et al., 1974) because it provides systematic stages and allows for repeated evaluation cycles at each stage of development. This made the approach very suitable for this research which requires high flexibility and adaptability to the dynamics of the specific school context. The research was carried out through four main stages, namely: (1) preliminary study, (2) model development, (3) validation and trials, and (4) model refinement and dissemination.

The development procedure was carried out to ensure each stage was directly related to the research formulation. Preliminary studies answered questions about existing conditions, model development addressed context-appropriate design needs, validation and trials tested feasibility and effectiveness, while refinement and dissemination ensured optimal model implementation in the field. The procedure for developing can be seen in Figure 1 below.



Figure 1: Procedure for developing an inclusive work readiness-based integrated skills learning management model for internships

The instruments used were tested for content validity and internal consistency. Content validity was assessed through expert judgment by lecturers in educational management (State University of Malang), lecturers in special education (State University of Malang), principals of special schools, and teachers at special schools. Internal reliability test using Cronbach's alpha coefficient on the data from the trial results of the instrument filled out by respondents in the initial stage.

3.1 Data Collection and Analysis

The data collection methods used in this study are summarized in Table 1.

Table 1: Method of collecting data

4D Stage	Data Searched	Method
<i>Define (Definition/ Preliminary Study)</i>	Theoretical review, existing skills learning management models, and actual conditions in special schools	Documentation, interviews, questionnaires, and content analysis
	Model development needs	FGDs, interviews, questionnaires
<i>Design (Planning)</i>	Initial design of the validation model and instrument (systematics, substance, language, graphics)	Literature study, expert review, documentation
<i>Develop (Development & Testing)</i>	Review the feasibility of the design by experts & practitioners	Questionnaires and interviews
	Limited, small group, expanded pilot to assess the content, practicality, and effectiveness of the model	Questionnaires, interviews, observations
<i>Disseminate (Dissemination)</i>	Refinement of the final model and dissemination process to other schools	Rating scale, interviews, documentation

FGDs: Focus group discussions

The research data consisted of qualitative and quantitative data. Data analysis was conducted according to the type of data obtained at each stage of development, referring to the research and development steps. Data analysis techniques is presented in the following table.

Table 2: Data analysis techniques

4D Stage	Data Source	Data Analysis
<i>Define (Definition/ Preliminary Study)</i>	Theoretical study, literature study, documentation, interviews, questionnaires, FGDs	Qualitative descriptive analysis to formulate the needs, constraints, and opportunities for model development; quantitative analysis to describe the results of the needs questionnaire.
<i>Design (Planning)</i>	Initial model design, validation instrument, expert review results	Qualitative descriptive analysis to examine the suitability of content, systematics, language, and graphical model; quantitative analysis
<i>Develop (Development & Testing)</i>	Expert validation data (education policy, education management, special education), practitioner validation data (principals, teachers), limited trial results, small groups, expanded	Qualitative descriptive analysis to interpret expert & practitioner input; quantitative analysis (mean scores, percentages, categorization) to assess the feasibility, practicality, and effectiveness of the model
<i>Disseminate (Dissemination)</i>	User feedback, rating scale results, socialization documentation	Qualitative descriptive analysis to interpret user responses; quantitative analysis to measure the level of acceptance of the model in other schools

FGDs: Focus group discussions

In the survey, data collection was conducted through questionnaires completed by respondents to determine the current state of skills learning management. Subjects in this survey were principals, teachers, parents, and parents of alumni. Interviews were conducted with principals and teachers. Focus group discussions (FGDs) were conducted with teachers and education stakeholders to obtain broader data relating to the management of integrated skills learning and inclusive work-readiness-based internships. See table 3.

Table 3: Focus group discussion (FGDs) participants

No.	Name of Participating Institution	Number (persons)
1	University	3
2.	Trenggalek Regent	1
2	East Java Provincial Education Office	1
3	Manpower Office	1
4	Tulungagung Regional Office Branch	1
5	Curriculum and Learning Center, Ministry of Education and Culture	1
6	Directorate of Community and Special Education	1
7	Special Education Supervisor	1
8	Special Education Principal	6
9	Special Education Teacher	6
10	Vocational High School Teacher	1
11	Industrial Psychologist	1
12	Entrepreneur/Business Professional/Industrial Professional	3
13	Parents of Students With Disabilities	3

4. Results and Findings

The preliminary study involved 30 respondents who were interviewed through questionnaires, observations, interviews, and FGDs. The development phase involved experts in education management and special education. The model's pilot phase included a limited pilot with 30 participants, a small pilot with 45 participants, and an expanded pilot with 53 participants.

4.1 Preliminary Research

Preliminary research on the implementation of skills learning management before the development of an integrated, inclusive, skills learning management model based on work readiness and practical work experience indicates that the current system in special schools in Trenggalek Regency still faces various challenges in almost all aspects and functions of educational management. The implemented model can be seen in Figure 2 below.

CURRENT LEARNING MANAGEMENT

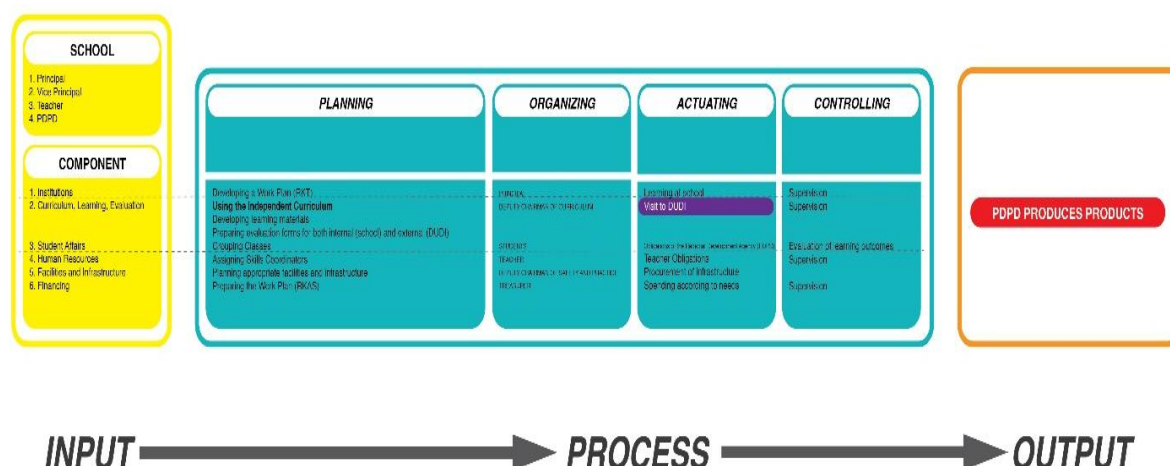


Figure 2: Pre-development skills learning management model

These findings were obtained from a recapitulation of work readiness questionnaires submitted by school principals, teachers, and parents, and were strengthened by the results of in-depth interviews with stakeholders. In the institutional aspect, the planning function has not fully involved all school members in formulating a vision and mission based on independence and work readiness. Collaboration between stakeholders is still informal, undocumented, and not based on sustainable cooperation agreements. In terms of curriculum, learning, and evaluation, most schools have not yet developed a skills curriculum based on the real needs of students and the workplace. The planning function is not supported by an objective assessment of student needs.

In terms of student affairs, assessments of student talents and interests are conducted without standardized measuring tools, based solely on teacher observations or subjective judgments. The organizational function is also unable to organize assessment and guidance teams consisting of teachers, parents, and experts. In terms of human resources, the majority of skilled teachers do not have a vocational education background and have not received in-depth competency training.

The infrastructure aspect also shows significant limitations. The available spaces and skills practice tools are not fully disability-friendly. In terms of funding, there is no dedicated budget allocated routinely to support skills learning. Budget planning still focuses on regular activities, without considering the needs of students with disabilities in preparing for the workforce. Overall, data from school principals, teachers, and parents, both in the form of questionnaires and interview results, show that the skills learning management model that has been used previously has not been able to prepare students with disabilities to enter

the world of work. The main weaknesses lie in the collaboration and oversight functions, which should be the backbone of a work-readiness-based skills education system. Planning, organization, and leadership are also not data-driven, structured, and do not fully involve stakeholders.

These findings emphasize the importance of developing a more systemic, adaptive, collaborative skills learning management model, combining and integrating all aspects of education management with a work readiness-based, participatory, and real practice-based approach through inclusive internships. The development flow for an inclusive, integrated skills learning model for work readiness-based internships is presented in Figure 3 below.

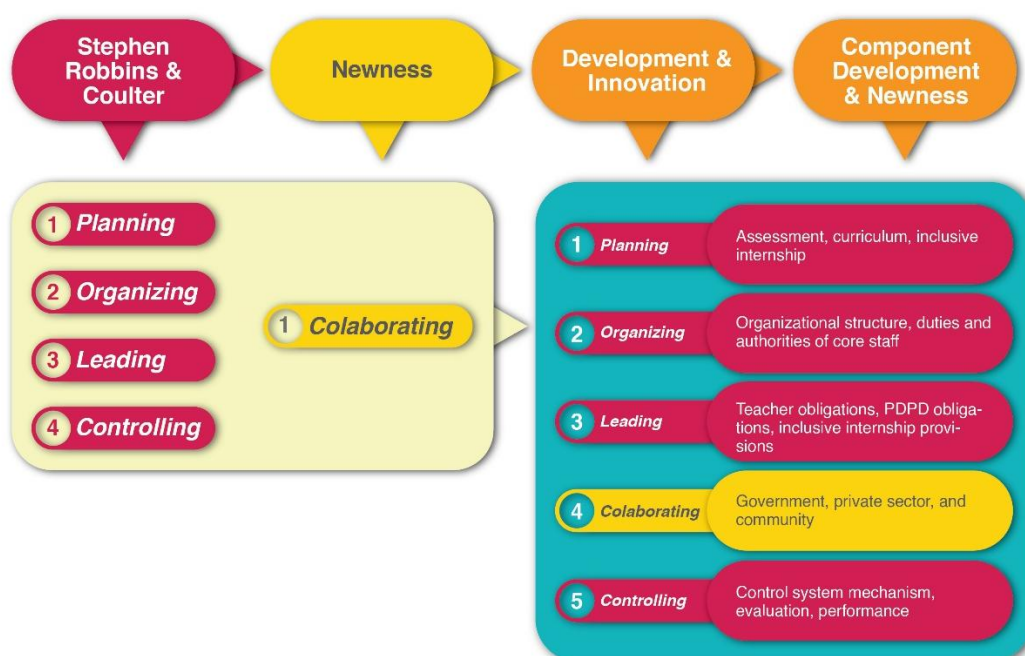


Figure 3: Development flow for an integrated skills learning management model for inclusive industrial work experience based on work readiness

4.2 Model Validation and Testing Stage

Model testing is carried out in three stages, namely limited trials, small trials, and final trials.

4.2.1 Limited Test

A limited trial was conducted with 30 respondents, namely 29 teachers and 1 principal, and research subjects were 3 high school students with disabilities, 2 with hearing and speech, and 1 with intellectual disability. The trial process began with implementing the model and ended with filling out a questionnaire. Validation used an assessment instrument in the form of a questionnaire consisting of six statements. The validation of the model substance is presented in Table 4 below.

Table 4: Validation of the model substance

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Describes Model updates	3.40	85.00	0.93	Valid
2	The substance of the model is important in skills learning management	3.33	83.33	0.92	Valid
3	Models are needed to achieve goals	3.37	84.17	1.00	Valid
4	Model easy to apply in special schools	3.23	80.83	1.01	Valid
5	Models can facilitate skill learning	3.33	83.33	0.92	Valid
6	The substance of the model has innovation	3.43	85.83	0.90	Valid
Amount		20.10	502.49	5.68	
Average		3.35	83.75	0.95	Valid

The validation of the model substance showed that all aspects received an average score above 3.25, with an overall average score of 3.35, or 83.75% of the maximum score. This indicates that the respondents deemed the model's substance valid. Validation of the applicability of the model in limited trials is presented in the following Table 5.

Table 5: Validation of the applicability of the model

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Model expected	3.37	84.17	0.93	Valid
2	Model required	3.40	85.00	0.93	Valid
3	Useful model	3.30	82.50	0.99	Valid
4	Models help	3.37	84.17	1.03	Valid
5	Practical model	3.40	85.00	0.97	Valid
6	The model can be implemented	3.40	85.00	1.00	Valid
Amount		20.24	376	5.58	
Average		3.37	94	0.98	Valid

The calculation results show an overall average score of 3.37, out of a maximum score of 4, with an average percentage of 84.47%. All aspects obtained an average score of ≥ 3.25 , meaning that they were all in the valid category. The standard deviation ranged from 0.93 to 1.03, indicating that respondents' perceptions of the model's applicability tended to be consistent and did not deviate significantly.

Validity testing was conducted using the Pearson correlation technique between each item and the total score (total-item correlation) of 30 respondents. An instrument is considered valid if the correlation coefficient (r) is greater than the r -table value for $N = 30$ and the significance (Sig.) is < 0.05 . Based on the r -table for $N = 30$ at a significance level of 0.05, the r -table value is 0.361. Therefore, each item

with an r -calculated value ≥ 0.361 and a sig. < 0.05 is declared valid. The results of the Instrument Item Validity Test are presented in Table 6 below.

Table 6: Instrument Item Validity Test

No.	Statement Items	Pearson Correlation	Sig. (2-tailed)	N	Description
1	Item 1	0.744**	0.000	30	Valid
2	Item 2	0.584**	0.001	30	Valid
3	Item 3	0.682**	0.000	30	Valid
4	Item 4	0.692**	0.000	30	Valid
5	Item 5	0.594**	0.001	30	Valid
6	Item 6	0.551**	0.002	30	Valid
7	Item 7	0.721**	0.000	30	Valid
8	Item 8	0.735**	0.000	30	Valid
9	Item 9	0.600**	0.000	30	Valid
10	Item 10	0.715**	0.000	30	Valid
11	Item 11	0.775**	0.000	30	Valid
12	Item 12	0.761**	0.000	30	Valid

Reliability testing was conducted to determine internal consistency between items in the model validation instrument by examining Cronbach's alpha values. The results of the instrument reliability test are presented in Table 7 below.

Table 7: Instrument reliability test

Statistics	Value
Number of Respondents (N)	30
Number of Items	12
Cronbach's alpha	0.894

Based on the test results, the Cronbach's alpha value was 0.894, which is considered high. This indicates that the instrument has excellent internal consistency and can be used to collect data to measure the substance and applicability of the skills learning model for students with disabilities.

4.2.2 Small Scale Testing

A small-scale test was conducted with 45 respondents and 7 students with disabilities, with a variety of disabilities including 3 deaf-mute students, 3 low vision students and 1 intellectual disability student. After the model was implemented, 45 respondents, consisting of teachers and principals, completed a model substance validation questionnaire. The results of the model substance validation are presented in Table 8 below.

Table 8: Validation of the model substance

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Describes Model updates	3.8	95.0	0.4	Valid
2	The substance of the model is important in skills learning management	3.9	97.2	0.3	Valid
3	Models are needed to achieve goals	3.8	95.6	0.4	Valid
4	Model easy to apply in special schools	3.8	95.0	0.4	Valid
5	Models can facilitate skill learning	3.9	96.7	0.4	Valid
6	The substance of the model has innovation	3.8	96.1	0.4	Valid
Amount		23.0	575.6		
Average		3.8	95.9		Valid

The standard deviation for each item ranged from 0.3 to 0.4, indicating that the distribution of respondents' answers was quite consistent and there were no significant differences in assessments between respondents. Overall, the average validation score for the model's substance was 3.8, with a validity percentage of 95.9% and an average standard deviation of 0.4. Based on the validity interpretation criteria, this average falls into the "very valid" category. This means that the substance of the developed model is deemed relevant, meaningful, and feasible for implementation in strengthening work readiness-based skills learning management.

The validation of the model's applicability aims to assess its practical application in the context of work-readiness-based skills learning in educational institutions, particularly special education high schools. The validation of the model's applicability is presented in Table 9 below.

Table 9: Validation of the applicability of the model

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Model expected	3.8	96.1	0.4	Valid
2	Model required	3.9	96.7	0.4	Valid
3	Useful model	3.8	93.9	0.4	Valid
4	Models help	3.8	95.0	0.4	Valid
5	Practical model	3.8	96.1	0.4	Valid
6	The model can be implemented	3.8	95.6	0.4	Valid
Amount		23.8	573.4		
Average		3.8	95.6		Valid

The overall average was 3.8 or 95.6%, which is included in the very valid category, indicating that respondents considered this model very feasible to be applied in learning practices. The standard deviation of each aspect ranged from 0.3 to 0.4, indicating consistency and agreement in assessments among respondents. Based on this, it can be concluded that this model is suitable for use as a reference in managing work readiness-based skills learning for students with special needs in addition to supporting the realization of adaptive and collaborative inclusive internships.

4.2.3 Expanded Test

The expanded trial involved 53 respondents, including principals and teachers. The expanded trial process began with the implementation of the model and concluded with the completion of a questionnaire. Implementation of the model began with an assessment of the abilities of seven students with disabilities in grade XII of a special needs high school: four with hearing and speech disabilities, one with intellectual disabilities, one with physical disabilities, and one with visual disabilities. The results of the validation of the substance of the expanded trial model are presented in Table 10 below.

Table 10: Validation of the model substance

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Describes Model updates	3.91	96.78	0.3	Valid
2	The substance of the model is important in skills learning management	3.87	96.75	0.3	Valid
3	Models are needed to achieve goals	3.92	98	0.3	Valid
4	Model easy to apply in special schools	3.87	96.75	0.4	Valid
5	Models can facilitate skill learning	3.87	96.75	0.4	Valid
6	The substance of the model has innovation	3.87	96.75	0.4	Valid
Amount		23.31	581.78		
Average		3.89	96.96		Valid

The standard deviation ranged from 0.3 to 0.4, indicating consistency in assessments across respondents. The overall mean validation of the model's substance was 3.9, or 97.1%, which falls into the "very valid" category. This finding indicates that the model's substance meets content quality standards and is deemed relevant, important, and suitable for use in strengthening the skills learning management process for students with disabilities. The validation of the model's applicability is presented in Table 11 below.

Table 11: Validation of the applicability of the model

No.	Aspect	Average Score	Percentage (%)	Standard Deviation	Description
1	Model expected	3.91	97.75	0.3	Valid
2	Model required	3.89	97.25	0.3	Valid
3	Useful model	3.92	98	0.3	Valid
4	Models help	3.87	96.75	0.3	Valid
5	Practical model	3.91	97.75	0.3	Valid
6	The model can be implemented	3.91	97.75	0.3	Valid
Amount		23,41	23.41	585.25	—
Average		3,9	3.9	97.54	0.3

The standard deviation is relatively low and stable at 0.3, indicating that respondents' assessments tend to be consistent. Although the mean score falls within the technically very valid range, in this study, the model's applicability is categorized as valid, meaning the model meets the requirements for practical implementation, but remains open to further development and refinement based on the context of field application.

Structurally, this model consists of six main, interconnected management components: (1) institutional aspects; (2) curriculum, learning, and evaluation aspects; (3) student aspects; (4) human resources aspects; (5) infrastructure aspects; and (6) financing aspects. The final visualization is presented in Figure 4 below.

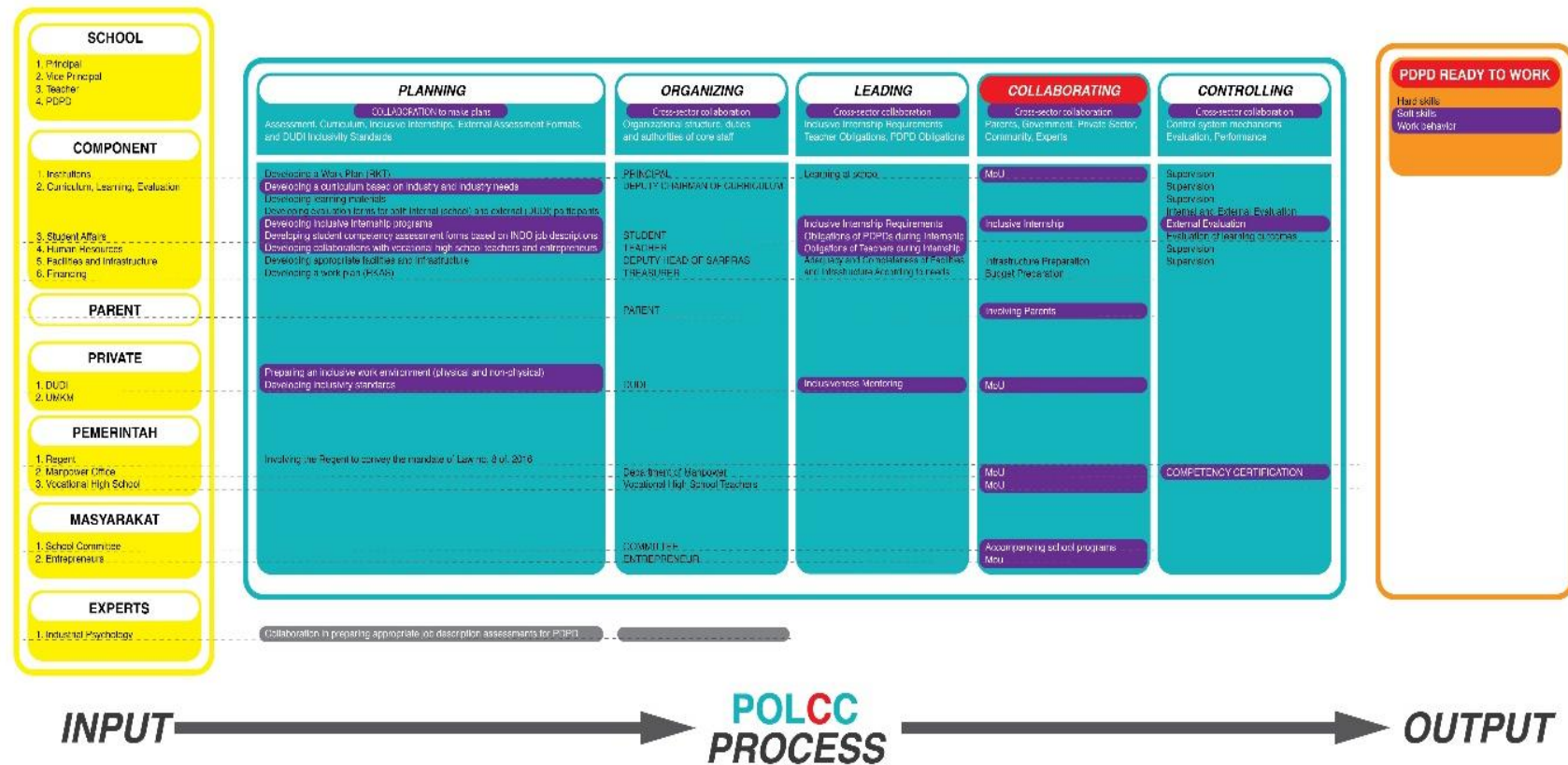


Figure 4: The development of the integrated skills learning management model for inclusive work-readiness-based internships

The Collaborating function in the model occupies a strategic position as a novelty in the integrated skills learning management model for inclusive internships based on work readiness. Collaboration is defined as the process of building networks, synergies, and shared understanding among stakeholders to realize internships that are adaptive to the needs of students with disabilities, in accordance with the demands of the workplace. The implementation of the Collaborating function is visualized through the SCRA (Stakeholder, Collaboration, Role, Action) approach, presented in Table 12 below.

Table 12: SCRA Collaborating Function in Inclusive Internship Design

<i>Stakeholder</i>	<i>Collaboration</i>	<i>Role</i>	<i>Action</i>
Special schools (Principal, Skills Teacher, Special Education Teacher)	Networking with the business and industrial world, and parents; developing an inclusive internship curriculum	- Developing internship programs based on student needs assessments and business and industrial standards. - Monitoring & evaluation	- Create a Memorandum of Understanding (MoU) with the business and industrial sectors - Prepare adaptive internship modules - Supervise internship implementation
Parent	Actively involved in planning and evaluation	- Providing moral, financial, and logistical support - Motivate children during the internship	- Attend coordination meetings - Accompany children when needed - Provide feedback on internship results
Business World/Industrial World	Become an official partner of the inclusive internship program	- Providing internship placements - Appoint field supervisors - Providing feedback on student performance	- Conducting real-world work training - Guiding students during internships - Providing internship certificates/ assessments
Government / Related Agencies	Facilitating inclusive industrial work experience regulations and policies	- Providing legal and policy support - Providing infrastructure support - Facilitating specialized school networks with the business and industrial world	- Create inclusive internship regulations - Provide financial assistance/facilities - Encourage the business and industrial world to participate actively

Based on the testing conducted, the model was deemed suitable for application in work-readiness-based skills learning. This model was deemed relevant to the special school curriculum, appropriate to the needs of students with disabilities,

and supportive of learning objectives that lead to independence and work readiness.

The design of this model was based on the principles of comprehensive and adaptive educational management, with a theoretical foundation of classic management functions (planning, organizing, leading, controlling) strengthened by a newly discovered function, namely Collaborating. The Collaborating function is key to the development of this model because it has proven to be the main differentiator between administrative management and management focused on inclusive work transitions. Furthermore, the Teaching Factory-based approach, Project-Based Learning, and Inclusive Internships are also integrated as a framework for learning real-world skills.

5. Discussion

The model development is based on the classic management theory of Robbins and Coulter (2018) with the Planning, Organizing, Leading, Controlling (POLC) function, which in this study was developed into POLCC with the addition of Collaborating. This function as the main framework for managing skills learning in special needs high schools.

The addition of the Collaborating function is also in line with the thinking of (Friend & Cook, 2013) on the importance of professional collaboration in inclusive education, where the success of learning management is determined not only by the internal role of the school, but also by the involvement of multiple parties including other parents, the business and industrial world, and local government. Schools and teachers can play an important role in promoting parental involvement in their children's education (Kamal et al., 2022). Collaboration between teachers and the parents of students with special needs is an important factor (Hermanto & Pamungkas, 2023).

A certain level of communication between families and school staff, as well as between schools and business owners trusted by families, is necessary. However, their communities, which provide opportunities for vocational training, job placement, internships, and real-world work experience, are not trusted by families (Almalky et al., 2020). Hence, students who perceive higher levels of parental involvement tend to develop stronger self-leadership skills, which in turn enhance their ability to cope with career-related challenges and transitions (Sun & Jiang, 2026).

Work-based learning and internships have been identified as key components of transition programs (Šiška et al., 2025). Pre-employment transition services are crucial for connecting youth with opportunities, enhancing collaboration with partner employment programs, and using data to inform service delivery for diverse youth with diverse life experiences (Hartman et al., 2025). Case management is crucial during the transition to adulthood. The various barriers to independence experienced by families with disabilities and low-income families can be overcome with a cross-domain case management model (McCormick et al., 2021).

It is important to incorporate employability development activities into the curriculum and demonstrate potential ways to increase engagement in diverse groups (Jackson et al., 2024). Differences in engagement in WIL programs across Science, Technology and Mathematics and underrepresented student groups, but the benefits of WIL on graduate job readiness and placement remain consistent (Jackson & O'Connor, 2026). Internships are not only a complex learning space involving affective and ethical learning, but more importantly, they are also a space for acquiring technical skills (Musa et al., 2025).

The urgency of developing a work-readiness-based skills learning management model is reinforced by research findings across various contexts. A study by (Anggraini & Sujarwanto, 2024) showed that the vocational program management at the Gedangan State Special School still faces challenges in planning, implementation, and evaluation, thus not fully preparing students with disabilities for entry into the workforce. Research by (Sitorus & Cahayani, 2024) shows that both soft and hard skills simultaneously positively influence work readiness, so inclusive vocational learning must integrate both aspects in a balanced manner.

Similar findings were demonstrated by (Alfiana et al., 2024), who found that internships experience strengthens both technical and non-technical skills in students, thereby further enhancing their readiness to enter the workforce. These findings reinforce the urgency of developing a work readiness-based skills learning management model in special needs high schools that connects learning with the industrial and industrial sectors through a more systematic partnership network. In practice, this model can serve as a guide for special schools in implementing skills-based learning oriented toward job readiness. It can also be used by education departments as an instrument for evaluating and developing inclusive education policies that are responsive to the needs of students with disabilities. This model can foster a culture of strategic collaboration between schools, families, and the workplace within the framework of developing inclusive vocational education.

6. Conclusion

This research develops an inclusive, work-readiness-based, integrated skills learning management model for internships through expert validation and field trials. One of the novelties of this model is its explicit emphasis on student job readiness as the final outcome. This model combines hard skills (technical skills relevant to the vocational field) and soft skills (discipline, communication, work resilience, and quality orientation) to support student success in real-world work environments.

The validation results provide important input regarding construct clarity, indicator suitability, and operationalization of management functions, which are then accommodated by strengthening the collaborating function and coordination flow between components. Field trials, both limited and extensive, demonstrate that this model is not only conceptually feasible but also operationally feasible for principals, skills teachers, special guidance teachers, and transition program

managers in special schools. The development of an integrated skills learning management model for inclusive work-readiness-based internships serves not only as a conceptual framework but also as an operational guide ready for use in designing, implementing, and evaluating integrated skills learning for inclusive internships. This model has proved to be effective in supporting the improvement of work readiness for students with disabilities while strengthening collaborative networks between schools, parents, government, and the business and industrial world.

The collaborative approach positions teachers, principals, parents, stakeholders, and the business and industrial sectors as a unified transition program ecosystem. This synergy enables schools to manage internships more effectively, facilitates communication between parties, and integrates stakeholder input into skills learning planning. Further researchers can develop longitudinal instruments for measuring the work readiness of students with disabilities.

7. Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article. This research was conducted independently and objectively, without any financial, personal, institutional, or commercial relationships that could be construed as a potential conflict of interest. All data collection, analysis, and interpretation were carried out solely for academic and scientific purposes.

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