



Development of A Social Collaborative E-Learning Model Based on Local Industrial Community Symbolic Adaptation

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ABSTRACT

This research addresses the pedagogical gap between abstract social theory and its real-world application in Indonesian higher education. The study aimed to design, develop, and validate the "Social Collaborative E-Learning Model" to foster students' symbolic adaptation and social skills by systematically integrating the local industrial community into the learning process. Employing a Research and Development (R&D) design based on the Borg and Gall model, the study involved a needs analysis with 143 students, model design, and validation by 12 experts using Aiken's V coefficient. A limited trial was then conducted with 50 first-semester Elementary School Teacher Education (PGSD) students to assess the model's practicality and feasibility using surveys and observations. The findings confirmed the model's high validity and practicality. The limited trial revealed overwhelmingly positive student responses, with 100% reporting increased motivation and engagement. The model proved effective in developing problem-solving (98%) and emotional management skills (96%). A notable 72% of students felt "pressured" in a productive way, indicating a challenging yet effective learning experience. Lecturer assessments corroborated these results, rating the model's implementation as "Very Good," particularly in fostering learning adaptation (94.4%). This study concludes that the model is a highly feasible solution for bridging the theory-practice divide. It provides a validated framework for creating impactful, community-centered curricula. Broader implementation is recommended, along with further longitudinal research to assess long-term impacts and the continuous refinement of the model's digital components for diverse local contexts.

KEYWORDS

Social collaborative e-learning; symbolic adaptation; community-based learning; instructional design; higher education.

INTRODUCTION

The concept of symbolic adaptation offers a powerful lens for understanding the dynamic, reciprocal relationship between individuals and the societal structures they inhabit. To better understand this dynamic within an educational context, this study integrates the concept of symbolic adaptation with social constructivist pedagogy. As articulated by Del Casino & Thien (2019) This process represents the natural and evolving connection between the human actor and the collective social world. Interactions between individuals, as da Silva (2023) explains: generate a complex web of symbols, including signs, gestures, communication patterns, and expressions, that function within a stimulus-response framework. Crucially, the relationship between stimulus and response in this context is not merely reflexive but consciously responsive, giving rise to shared meanings and sustainable social objectives. Within the landscape of Indonesian higher education, fostering this form of societal symbolic adaptation has become a national priority. The government is actively promoting the community's collaborative involvement as an essential partner in enhancing the quality of human resources and advancing national knowledge. (Choir et al., 2026; Harjatanaya et al., 2025). This mandate calls for the creation of "impactful universities" where the curriculum is not an isolated academic exercise but a living entity, deeply influenced and enriched by external factors such as local culture, the surrounding environment, and real-world social relations (Abdullahi, 2025; Amini et al., 2023). In this ideal model, society, as the primary owner and generator of culture, acts as a vital catalyst, empowering higher education institutions to explore and integrate rich cultural potential directly into the curriculum, making learning both relevant and resonant (Langrafe et al., 2020; Wright et al., 2022).

However, a significant pedagogical barrier often prevents the realization of this vision, a disconnect that can be analyzed through the semiotic framework of De Saussure (1966). In the context of social studies education, academic concepts function as signifiers, while the community's lived social realities serve as signifieds. In a robust learning environment, these two must be inextricably linked (de Saussure, 2021; Morán Herrera & Idrovo Hurel, 2024). In many theoretical courses, academic concepts are presented to students in a sterile, abstract manner, detached from the tangible, lived realities of the community to which the signifieds belong. This research identified this precise issue as a central challenge. A preliminary needs analysis conducted with 143 Elementary School Teacher Education (PGSD) students revealed that the existing pedagogy was overwhelmingly passive, limited to presentations and discussions that failed to bridge theoretical knowledge with social application. Consequently, a majority of students (58%) reported finding the material in the "Social Studies Concepts" course difficult to understand, precisely because of its abstract nature. In comparison, nearly half (47%) felt the lecture methods were uninnovative and disconnected from real-life social situations. This chasm between classroom theory (signifier) and community practice (signified) impedes symbolic adaptation. When students are not guided to observe existing signs in their community and connect them to foundational concepts, the learning process becomes a hollow exercise

that fails to cultivate the sensitivity required to transform knowledge into meaningful social action (Cress & Stokamer, 2022; Moloi et al., 2023; Mthimkhulu, 2024; Segooa & Molise, 2024).

This theoretical disconnection impedes the student's ability to construct meaning, a core tenet of both symbolic adaptation and social constructivism (Deely & Semetsky, 2017; Manghi & Vargas, 2021). The symbolic relationship between the educational world and the local industrial community fails to materialize because the necessary semiotic connections are never forged. Drawing on Peirce's semiotic triad, the learning process stalls: the initial awareness of visual and verbal objects, what can be termed the *icon sign*, remains weak due to the physical and conceptual distance maintained between students and their local environment (Menchetelli, 2020; Pedersen, 2021). This failure initiates a cycle of indifference, in which the lack of an "indexical" connection to real-world relevance prevents the formation of deep "symbolic" understanding. For students, these topics become mere academic discussions rather than urgent, actionable realities. Consequently, the ultimate goal, the formation of *symbolic signs* where students develop a deep, meaningful, and motivating relationship with the objects and culture of the local industrial community, is never achieved. This manifests as student indifference and an inability to perceive how local culture supports professional well-being. On the other side of the divide, the community becomes apathetic towards collaboration, seeing little effort from the educational world to position the younger generation as genuine agents of social change (Fenwick, 2014; Lehmeidi, 2025; Millar & Vione, 2024; NamGung & Lee, 2024). This mutual indifference solidifies a dysfunctional barrier, preventing the university from fulfilling its role as a partner in social and cultural development.

To directly address this complex pedagogical and semiotic challenge, this study details the rigorous design, development, and validation of the "Social Collaborative E-Learning Model Based on Local Industrial Community symbolic adaptation." The model represents a theoretical synthesis: it employs Vygotsky's (1978) social constructivism as the mechanism to achieve the goal of symbolic adaptation. This model is engineered to be a direct intervention, systematically dismantling the wall between abstract theory and practical application. Its core purpose is to facilitate genuine symbolic adaptation by intentionally re-establishing the broken link between the signifier and the signified. Grounded in Vygotsky's (1978) social constructivist theory, the model posits that meaningful learning is an inherently social and collaborative process. It operationalizes this theory through a structured, seven-stage learning syntax—*Orientation, Discovery, Collaboration, Social Interaction, Problem Solving, Evaluation, and Publication*—that guides students out of passive spectatorship and into active engagement. By strategically positioning the local industrial community as a primary learning resource and its members as "More Knowledgeable Others," the model systematically re-establishes the broken link between the signifier (theory) and the signified (community reality). The cause-and-effect relationship of the community's actions becomes a living text for students, motivated by the practical and procedural needs of the learning process itself.

This research, therefore, aims to present a validated, replicable framework that empowers educators to cultivate students' social adaptation abilities, specifically their cognitive social sensitivity, collaborative behaviors, and emotional management within a social system. The novelty of this work lies not in the general concept of community engagement, but in integrating symbolic adaptation theory into a comprehensive, technology-supported e-learning model with a clearly defined pedagogical sequence. While previous research has explored literacy models and community learning resources, this study offers a unique, structured approach designed to be integrated into the basic education curriculum in higher education. This model, supported by the "Eduscolar" educational website and specialized teaching materials, is expected to have a significant impact by transforming the local industrial community's role and function into a source of knowledge and a key social actor in the educational process. Ultimately, this research offers a practical and theoretically robust strategy for implementing a community-based curriculum, fostering student empowerment, and ensuring that Indonesian higher education produces graduates who can adapt to and shape the complexities of modern life.

Based on the problems identified above, the objectives of this study are to:

1. Analyze the need to develop a social collaborative e-learning model based on the participation of the local industrial community to improve the social adaptability of PGSD (Elementary School Teacher Education Major) students.
2. Develop a social collaborative e-learning model based on the participation of the local industrial community that is suitable for improving the social adaptability of PGSD (Elementary School Teacher Education Major) students.

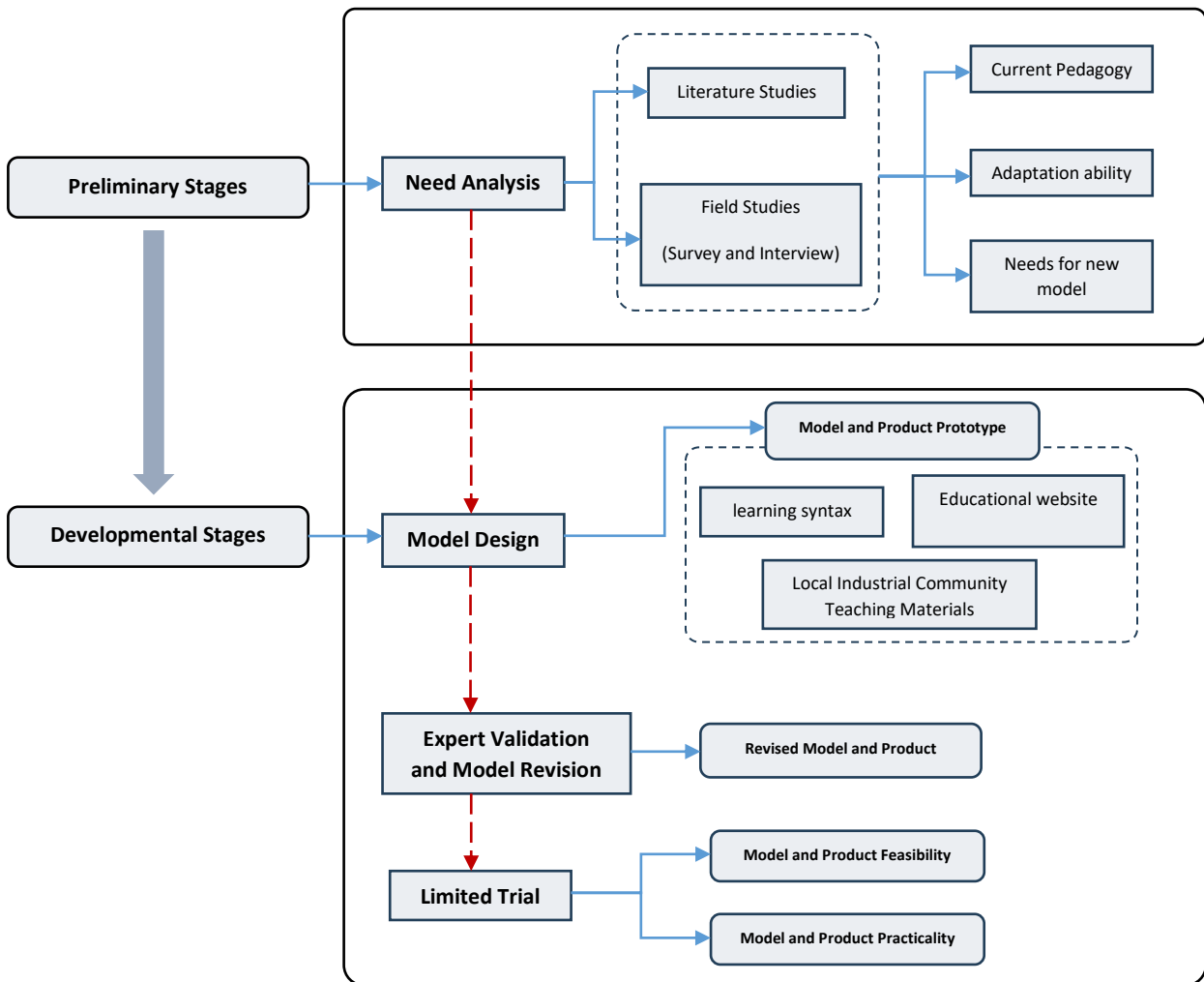
METHOD

Research design

This research uses the Research and Development (R&D) framework, a series of processes or steps for developing a new model or improving an existing product. The development model used in this study was the Gall & Borg (2003) development model ((1) needs analysis; (2) model design; (3) expert validation and model revision 1; (4) limited trial; (5) model revision; (6) broad trial; (7) model effectiveness test; (8) final model; (9) implementation and (10) dissemination), developed by Borg and Gall to design Social Collaborative E-Learning Model as explained in Figure 1. The discussion of this research is limited to model development only, namely, expert validation.

Figure 1.

Borg and Gall's model of development for the Social Collaborative E-Learning Model

**Needs Analysis**

The initial stage involved a comprehensive needs analysis to establish the rationale and requirements for the new learning model. This was conducted through a two-pronged approach: a literature review and a field study. The literature review focused on social constructivist theories, collaborative learning, and existing models of community participation in education. The field study aimed to identify current challenges in the Social Studies Concepts course (*Konsep IPS*), assess students' existing social adaptation abilities, and determine the need for an innovative pedagogical model. The study involved 143 Elementary School Teacher Education (*PGSD*) students and 3 lecturers from three universities in the Pantura Timur region of Central Java, Indonesia. Data were collected through surveys, observations, semi-structured interviews, and a social adaptation rating scale to ensure a holistic understanding of the problem.

Model Design

Based on the findings from the needs analysis, a "Social Collaborative E-learning Model Based on Local Industry Community Participation" was designed. The design process involved defining the product specifications, formulating learning objectives, and structuring the pedagogical

stages to enhance students' social adaptation. The core components developed were: (1) a unique learning syntax consisting of seven stages: Orientation, Discovery, Collaboration, Social Interaction, Problem Solving, Evaluation, and Publication; (2) a complementary educational website named "Eduscolar" to facilitate online interaction and project management; and (3) specialized teaching materials for the Social Studies Concepts course that integrate local industrial community contexts. The model was structured for a blended learning environment, combining classroom instruction with direct engagement with local industry practitioners.

Expert Validation and Model Revision

The initial prototype of the model, including its syntax, the Eduscolar website, and the teaching materials, underwent a rigorous validation process by a panel of experts. Twelve experts across six relevant fields—instructional design, educational media, social studies content, information technology (IT), educational psychology, and language—were involved, with two experts per field. Data were collected using validation checklists, and feedback was analyzed both qualitatively (through expert comments and suggestions) and quantitatively. The quantitative analysis utilized Aiken's *V* coefficient to determine the content validity and inter-rater agreement of the model's components. Based on the experts' feedback, the model and its accompanying materials were iteratively revised until they were deemed suitable for trial implementation.

Limited Trial

Following expert validation, a limited trial was conducted to test the initial feasibility and practicality of the revised model in a real-world educational setting. The trial involved a purposively selected group of 50 first-semester PGSD (Elementary School Teacher Education Major) students (5 males and 45 females), aged typically between 18 and 20 years, along with one lecturer from Universitas Muria Kudus. The participants were chosen to represent a range of learning characteristics to provide diverse feedback. The model was implemented over three class meetings, focusing on the first learning objective of the Social Studies Concepts course. The purpose of this trial was to observe the model's application, identify potential challenges, and gather preliminary data on its effectiveness in improving students' social adaptation skills in a controlled environment.

Instrument

A variety of instruments were developed and employed throughout the research stages. In the preliminary stage, data were collected using a Needs Analysis Survey and Interview Guidelines. The survey aimed to map students' current learning experiences, the gap between theory and practice, and the necessity for a collaborative model. The instrument consisted of 14 key indicators covering pedagogical challenges, community engagement, and technological needs. Then, to assess the feasibility of the designed product, Expert Validation Checklists were employed. These checklists utilized a Likert scale to evaluate the product across six specific domains: Instructional Design, Educational Media, Social Studies Content, Information Technology (IT), Language, and Educational Psychology. The data from these checklists were

analyzed using Aiken's V coefficient to establish content validity before the model was tested in the field.

During the limited trial, primary instruments were used to measure the model's practicality and its impact on student social adaptation:

- **Social Adaptation Scale (Performance Rubric):** This instrument was designed to measure specific social skills, including cognitive social sensitivity, collaborative behaviors, and emotional management during the project-based tasks.
- **Student Response Survey:** This instrument measured the practicality of the model from the students' perspective, covering five dimensions: Interest, Attractiveness, Effectiveness, Ease of Use, and Seriousness.

All instruments, particularly the social adaptation scale and expert validation sheets, were validated for content and reliability prior to use. The validity was evaluated using Aiken's V coefficient across two rounds of expert judgment. In the first round, the instrument scored 0.84, which improved to 0.90 in the second round, confirming its validity. Then, Internal consistency was tested using Cronbach's Alpha, yielding a coefficient of 0.699, indicating that the instrument is reliable for measuring students' social adaptation abilities.

Data Analysis

The data were analyzed using a mixed-methods approach corresponding to each research phase. In the needs analysis stage, quantitative data from surveys and the adaptation scale were analyzed using descriptive statistics. In contrast, qualitative data from interviews and observations were analyzed thematically to identify key issues. For the expert validation phase, qualitative feedback was synthesized to guide revisions, and quantitative checklist data were analyzed using Aiken's V coefficient to establish content validity. During the limited trial, student responses to the model application were analyzed using quantitative descriptive analysis, and data from observation sheets were also analyzed using descriptive quantitative methods to assess the model's practicality and the implementation of its syntax. This was supplemented with a qualitative analysis of notes and feedback from the lecturer and students to refine the model for broader implementation.

Ethical Considerations

Ethical clearance was obtained from the Ethics Committee for Research Involving Human Subjects at Muria Kudus University (Ref. No. 65/LPPM.UMK/B.02.08/II/2025). Verbal informed consent was obtained from all participants prior to data collection.

FINDINGS

Development of a Social Collaborative E-Learning Model

Need Analysis

The development of the Social Collaborative E-Learning Model was grounded in a systematic Research and Development (R&D) framework, beginning with a comprehensive needs analysis

and culminating in expert validation to ensure the product's viability before trial implementation.

A preliminary needs analysis was conducted through literature reviews and field studies involving 143 Elementary School Teacher Education (PGSD) students and 3 lecturers across three universities in Indonesia's Pantura Timur region. The analysis confirmed that students' social adaptation abilities in cognitive, behavioral, and emotional aspects were low. The existing pedagogy was passive, often limited to presentations and discussions, which failed to connect theoretical concepts with social realities. This established a clear need for an innovative learning model that could bridge this gap.

Table 1.

Need Analysis Survey

No	Questions	N (Valid)	Mean	Std. Deviation
1	Have you ever taken a lecture using a collaborative learning model?	143	.86	.35
2	Have you ever used the "Social Studies Concepts" course module?	143	.66	.48
3	Have you ever used a website as a learning resource?	143	.99	.12
4	Do you think the materials in the "Social Studies Concepts" course are difficult to understand?	143	.58	.49
5	Do you have difficulty understanding the study materials and the teaching methods used by the lecturer?	143	.47	.50
6	Are you enthusiastic and feel challenged to solve social problems during the "Social Studies Concepts" lectures?	143	.90	.31
7	Have you ever been invited by the lecturer to collaborate with the industrial community during the "Social Studies Concepts" lectures?	143	.48	.50
8	Does the lecturer design modules and learning materials based on students' levels of understanding?	143	.88	.33
9	Does the lecturer design the "Social Studies Concepts" lectures to improve students' higher-order thinking skills?	143	.97	.17
10	Do the "Social Studies Concepts" lectures help you develop socially aware behavior?	143	.99	.08
11	Do the assignments in the "Social Studies Concepts" course require students' ability to manage social interactions with their surrounding environment?	143	.90	.31
12	Do you need technology-based learning media in the "Social Studies Concepts" course?	143	.94	.23
13	Do you need community participation to implement social theory in the "Social Studies Concepts" course?	143	.91	.29
14	Do you agree that, if a social, collaborative e-learning model is developed based on local industrial community participation, it would improve adaptability?	143	.97	.17

Evidence of Pedagogical Limitations

The survey data highlights significant deficiencies in the existing learning environment. While 86% of students reported exposure to cooperative learning (Item 1), the depth of this collaboration is superficial. Crucially, 58% of students (Item 4) reported finding Social Studies concepts difficult to understand, directly attributing this to the material's abstract nature. This supports the premise that without “signified” real-world examples, the “signifiers” (theories) remain inaccessible. Furthermore, 47% of respondents (Item 5) explicitly stated that the current teaching methods were uninnovative and disconnected from real-life situations. Perhaps the most telling evidence of the theory-practice gap is Item 7: only 48% of students had ever collaborated with the local industrial community, leaving most students isolated from the very social systems they are studying.

These statistical findings are strongly corroborated by qualitative data from semi-structured interviews, which reveal the students’ frustration with passive pedagogies.

Interview with a MNA student at UNISNU Jepara:

“When group work is conducted, the roles of each group are not balanced, so many members are left hanging with other group members.”

Interview with a MI student at UMKU Kudus:

“To avoid monotony, it’s best to get used to discussing with others and using theory to solve problems.”

Interview with an IO lecturer at UMK Kudus:

“Student response is still not optimal, especially since PGSD has five main subjects, so when students are exposed to material that is too difficult, it seems difficult to absorb and apply it.”

The need analysis provides overwhelming evidence of student demand for a specific intervention. There is a near-universal consensus (97%, Item 14) on the necessity of a Social Collaborative E-Learning Model. Students expressed a strong desire for technology integration (94%, Item 12) and, crucially, direct community participation (91%, Item 13) to help them implement social theories. The data show that students are not passive: 90% (Item 6) feel challenged and enthusiastic about solving social problems, but the current curriculum fails to provide a platform for this engagement.

In conclusion, the convergence of quantitative gaps (high abstraction and low community contact) and qualitative feedback (complaints of monotony and isolation) provides definitive evidence for the development of the Social Collaborative E-learning Model Based on Local Industry Community Participation.

Design and Development of Social Collaborative E-learning Model Based on Local Industry Community Participation

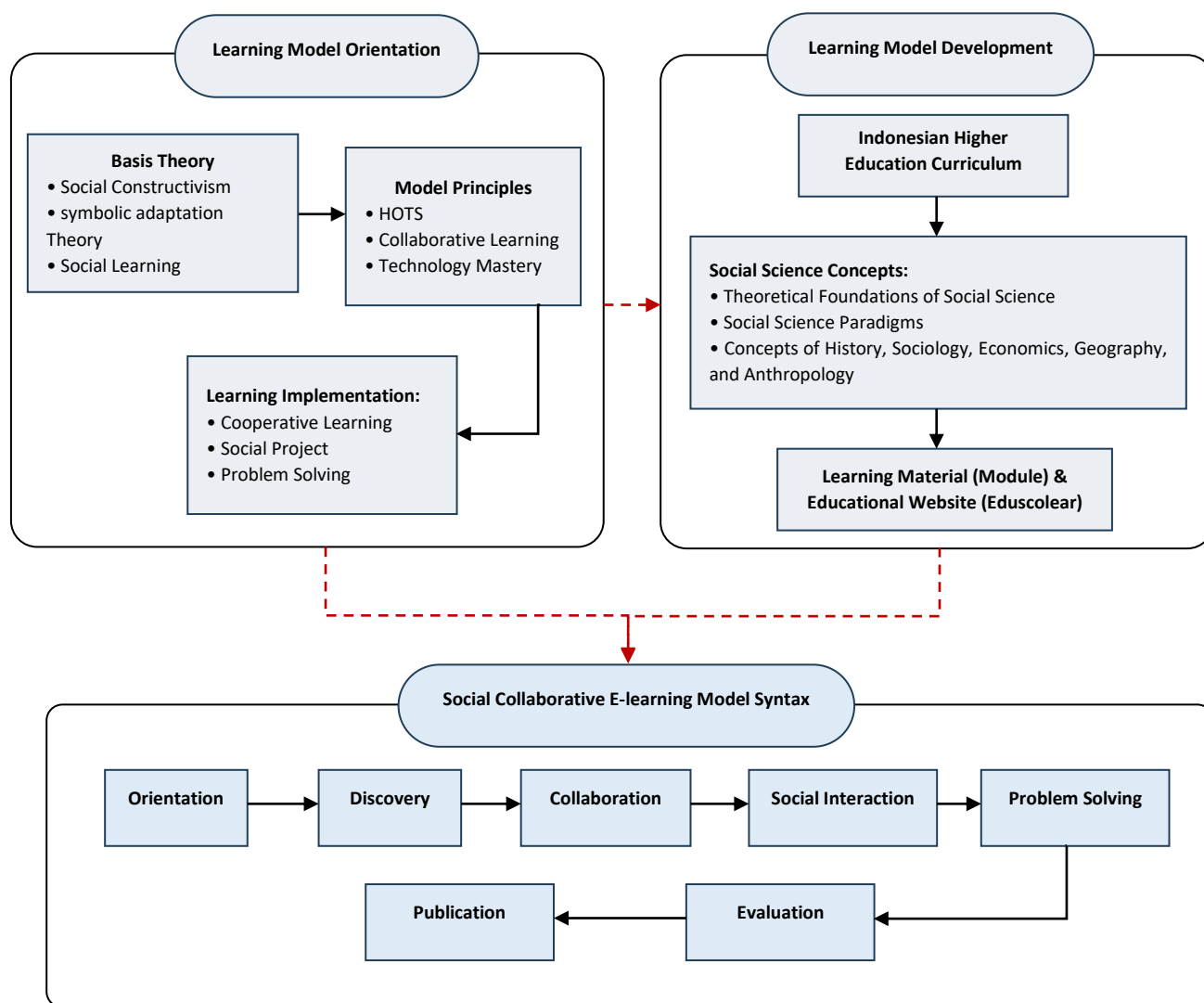
Based on these findings, the “Social Collaborative E-learning Model Based on Local Industry Community Participation” was designed. The model is built on a unique seven-stage learning syntax: Orientation, Discovery, Collaboration, Social Interaction, Problem Solving, Evaluation, and Publication. To support this syntax, two complementary products were developed: a

dedicated educational website named “Eduscolar” to facilitate online interaction, and specialized teaching materials for the Social Studies Concepts course that integrate contexts from the local industrial community.

The development of this model is based on three main theories, namely Social Constructivism, Transformative Learning, and Social Learning. Furthermore, the model design applies the principles of higher-order thinking, collaborative learning, and mastery of technology. Furthermore, by implementing Cooperative Learning, Social Projects, and Problem Solving, the framework and syntax of the Social Collaborative E-learning Model are established, comprising Orientation, Discovery, Collaboration, Social Interaction, Problem Solving, Evaluation, and Publication. The detailed development of the Social Collaborative E-learning Model is shown in Figure 2.

Figure 2.

Basis, Development, and The Social Collaborative E-learning Model Syntax



Crucially, this model was not developed in isolation but rather in conjunction with a comprehensive learning ecosystem comprising a dedicated website and specialized modules. This integration was essential to address the “semiotic gap” identified in the needs analysis. The

“Eduscollear” educational website was developed to serve as a digital collaboration hub, enabling real-time interaction between students and community practitioners (the “More Knowledgeable Others”) regardless of physical location. It functions as the platform for the “Publication” and “Social Interaction” stages of the syntax. Complementing this, the specialized teaching materials were designed to provide the necessary theoretical scaffolding. Unlike standard textbooks, these modules integrate specific local industrial case studies, serving as a bridge between abstract social theories and the concrete realities observed during the “Discovery” and “Collaboration” phases. Together, these supplementary materials ensure that the learning process is both structurally supported and contextually rich.

Figure 3.

Design of (a) Educational Website (Eduscollear) and (b) Learning Module



(a)



(b)

Table 2.

Feasibility of The Product

Validation Category	Product Validated	Aiken's V (Round 1)	Aiken's V (Round 2)	Result
Instructional Design	Social Collaborative E-Learning Model	0.85	0.92	Valid
Educational Media	Eduscollear Website	0.85	0.93	Valid
Social Studies Content	Teaching Materials	0.90	0.95	Valid
Information Technology (IT)	Eduscollear Website	0.84	0.88	Valid
Language	Teaching Materials & Website	0.90	0.93	Valid
Educational Psychology	Social Adaptation Scale Instrument	0.84	0.90	Valid

The complete prototype, including the model's syntax, the Eduscollear website, and the teaching materials, underwent a rigorous expert validation process. A panel of twelve experts from six relevant fields (instructional design, educational media, social studies content, IT,

educational psychology, and language) assessed the products using validation checklists. Quantitative data from this process were analyzed using Aiken's V coefficient to determine content validity, with the results summarized in the table below.

Qualitative feedback from the experts was instrumental in refining the model. Key suggestions included clarifying the link between the model's stages and the development of specific social adaptation skills (cognitive, behavioral, and emotional), improving the organization and applicability of the teaching materials, and enhancing the Eduscolar website's user interface and responsiveness to ensure clear instructions and faster feedback loops. These revisions were implemented iteratively until the experts deemed the complete product package suitable for field testing.

Usability and Practicality of the Social Collaborative E-Learning Model, Website, and Learning Materials

Following expert validation, a limited trial was conducted to assess the model's practicality and feasibility in a real-world setting. The trial involved 50 first-semester PGSD students and one lecturer at Universitas Muria Kudus over three class meetings. Data on the model's practicality were collected through surveys and observation sheets and analyzed using descriptive quantitative methods.

Table 3.

Usability result of the product based on a survey of 50 students

Aspect	Indicator	Score (%)
Interest in learning	Motivated by the Social Studies Concept lectures, using a social collaborative e-learning model based on local industrial community participation	100
	Requires learning adjustment with the social collaborative e-learning model based on local industrial community participation	100
Attractiveness	Feels curious about the material presented in the lecture module and the educational website	100
	Able to act to solve social problems given by the lecturer	98
	Able to manage emotions in collaboration with lecturers, friends, and the community	96
Effectiveness of lecture activities	Students are active in the Social Studies Concept lecture activities	100
	Students feel pressured to implement the social collaborative e-learning model based on local industrial community participation	72
Ease of Use	Students easily interact to obtain cognitive knowledge about social theory from lecturers, from local industrial community learning resources, and from technology	100
	Students easily collaborate with the local industrial community	100
	Students easily operate the educational website	90
Seriousness	Follows the lecture stages seriously	100
	Has cooperative and individual responsibility in lecture activities	100

The results of the limited trial indicate a high degree of usability and practicality for the Social Collaborative E-Learning Model, the Eduscollear website, and the accompanying learning materials from both student and lecturer perspectives. Analysis of student feedback, as detailed in Table 3, reveals overwhelmingly positive responses across several key indicators. All participating students (100%) reported feeling motivated by the new model and acknowledged the need for learning adjustment, indicating high engagement and buy-in. Similarly, 100% of students were engaged in lecture activities, found it easy to interact with lecturers and community members to learn, and felt a strong sense of responsibility. The model also proved effective in sparking curiosity, with 100% of students expressing interest in the material presented.

Notably, the vast majority of students felt capable of applying their learning: 98% felt able to act to solve social problems, and 96% were confident in managing their emotions during collaborations. While the usability of the Eduscollear website was rated slightly lower, it was still high at 90%. Interestingly, 72% of students reported feeling “pressured” while implementing the model. This suggests that while the model is user-friendly, it is also challenging, pushing students out of passive learning roles and into active, problem-solving engagement, which aligns with the model’s objective of enhancing social adaptation skills.

Table 4.

Limited Field Test Results of Social Learning Based on Symbolic Adaptation in Local Industrial Communities by Panel

Aspect	Response Percentage	Criteria	Description
Material Quality	90	Very Good	The depth of the material reflects the problems facing the local industrial community.
Mastery of Learning Strategies	91.7	Very Good	The learning stages begin with theory, then practice, and finally problem-solving.
Learning Adaptation	94.4	Very Good	Learning adaptation to the community is carried out collaboratively.
Curiosity in Problem Solving	89.4	Very Good	Problem-solving is in accordance with the agreement of the local industrial community.
Interaction of Learning Activities	91.1	Very Good	Two-way interaction with the community is consistent with addressing social issues.
Systematization of Learning Stages	89.44	Very Good	The learning stages test two-way and adaptive communication, both programmed and unstructured.

The lecturer’s assessment, summarized in Table 4, corroborates the positive student feedback, rating all aspects of the model’s implementation as “Very Good”. The model’s capacity for Learning Adaptation received the highest score (94.4%), highlighting its success in fostering collaborative learning with the community. The Mastery of Learning Strategies was also highly

rated (91.7%), confirming that the model's stages effectively guide students from theoretical understanding to practical problem-solving.

Furthermore, the quality of Interaction of Learning Activities (91.1%) and Material Quality (90%) were affirmed, indicating that the model successfully facilitates meaningful, two-way communication with the community about relevant social issues. The lecturer also noted the model's effectiveness in stimulating Curiosity in Problem Solving (89.4%) and its logical Systematization of Learning Stages (89.44%), which successfully tests students' adaptive communication skills. Collectively, these findings from both students and the observing lecturer confirm the model's high practicality and feasibility for enhancing social learning in higher education.

DISCUSSIONS

The development and initial validation of the Social Collaborative E-Learning Model represent a significant step toward bridging the well-documented gap between theoretical knowledge in higher education and its practical application within a societal context. The findings confirm that the model is not only feasible and practical but also highly engaging for students, addressing the core problem identified in the needs analysis: a passive pedagogy that fails to cultivate students' social adaptation abilities. The overwhelmingly positive response from both students and the lecturer in the limited trial underscores the model's potential to transform the learning experience in the Social Studies Concepts course.

This research strongly aligns with and provides empirical support for Vygotsky's social constructivist theory, which posits that learning is an inherently social process (Mohammed et al., 2020). The model's unique seven-stage syntax, particularly the "Collaboration" and "Social Interaction" phases, operationalizes Vygotsky's concept of the Zone of Proximal Development (ZPD) (Poehner & Lantolf, 2021). By positioning the local industrial community as the "More Knowledgeable Other" (MKO), the model creates an authentic learning environment in which students can tackle real-world social problems that would be beyond their reach in a traditional classroom. The high ratings for "Learning Adaptation" (94.4%) and "Interaction of Learning Activities" (91.1%) in the trial demonstrate the effectiveness of this socially mediated learning approach. As stated by Kampouri et al. (2019) and Zajda (2021), social constructivism views learning as a process of integrating learners into a knowledge community. This integration is vital for adapting to community settings, as it involves collectively sharing and constructing knowledge. Furthermore, the model successfully addresses the semiotic disconnect described in the introduction through the lens of Saussure's theories. The initial indifference of students, stemming from a perceived distance between educational signs (theories) and their real-world signifieds (community realities), was effectively overcome. By immersing students in the local industrial community, the model transforms abstract academic concepts into tangible, meaningful symbols, fostering the symbolic adaptation necessary for students to see the value and relevance of their studies (Li et al., 2024).

In relation to previous research, this study builds upon existing work on community-based learning (B. Johnston, 2023) and social projects (Eaton-Stull, 2024) but offers a distinct novelty. Prior studies have highlighted the importance of interactive collaboration and the potential of social projects to develop skills, they often lack a structured, replicable pedagogical framework (Ningsih et al., 2025; Rusu et al., 2024). The novelty of this research lies in the integration of symbolic adaptation theory into a comprehensive, technology-supported e-learning model with a clear, sequential syntax. Unlike general project-based learning, the Social Collaborative E-Learning Model provides a systematic process that guides students from orientation and discovery to problem-solving and publication, ensuring a consistent and intentional focus on developing cognitive, behavioral, and emotional aspects of social adaptability. The inclusion of the "Eduscolar" website further distinguishes this model by providing an essential digital infrastructure for collaboration, resource sharing, and project management, which is critical in contemporary higher education. As stated by Beardsley et al. (2021) and Grassinger et al. (2022) Digital media plays a significant role in enhancing instructional models by fostering self-directed and cooperative learning, making lessons less teacher-centered and more engaging for students.

An interesting and significant finding was that 72% of students felt "pressured" while implementing the model. In the context of scientific debates surrounding student-centered learning, this finding should not be interpreted negatively. Rather, it suggests the model induces a "productive struggle," a form of desirable cognitive dissonance that is essential for deep learning and skill development (Köpeczi-Bócz, 2025; McCabe & O'Connor, 2014; Paurowski et al., 2025). This pressure challenges the passive learning culture identified in the needs analysis and aligns with the principles of Transformative Learning, where learners must be pushed out of their comfort zones to question assumptions and develop new perspectives (Jarry-Shore & Richardson, 2025). This controlled pressure is what drives the development of genuine problem-solving skills and emotional resilience, key components of the social adaptation the model aims to foster.

The implications of this research are multifaceted. For educational practice, this model provides a robust and validated framework that can be adapted by other higher education institutions across Indonesia and beyond to create more impactful and socially relevant curricula. It offers a clear pathway to empower local communities as co-educators, enriching the learning experience and fostering a sense of civic responsibility in students. The successful integration of the "Eduscolar" platform also highlights the potential for blended learning to facilitate complex, community-based projects. Theoretically, this study contributes a practical application of symbolic adaptation theory to instructional design, demonstrating its utility in bridging the theory-practice divide. Ultimately, this research provides a tangible strategy for realizing the national goal of creating universities that are not isolated ivory towers, but dynamic hubs of knowledge and collaboration that actively contribute to the social and cultural capital of their communities.

CONCLUSIONS

This research successfully developed, validated, and trialed the Social Collaborative E-Learning Model, confirming it as a highly feasible and practical solution to the persistent gap between abstract social theory and its real-world application in Indonesian higher education. The main findings from the limited trial demonstrate that the model, supported by the "Eduscollear" website and specialized modules, effectively transforms passive learning into an active and engaging process. It successfully fosters students' social adaptation abilities by immersing them in the local industrial community, with overwhelmingly positive responses from both students and lecturers highlighting its practicality in improving motivation, collaboration, and practical problem-solving skills. Notably, the experience of "productive pressure" reported by students indicates the model's success in challenging them to develop deeper cognitive and emotional resilience. Based on these promising results, we recommend the broader implementation of this model in other higher education settings to create more impactful, community-centered curricula. Further research should involve larger-scale trials and longitudinal studies to measure the long-term effects on student competence and social integration. We also advise the continuous refinement of the digital platform and the development of more diverse teaching materials to adapt the model to various local industrial contexts, thereby fully realizing its potential to empower students as active agents of social change.

However, this study has several limitations that must be acknowledged. First, the trial was conducted on a limited scale involving only 50 students from a single study program (PGSD) at one university (Universitas Muria Kudus), which may limit the generalizability of the findings to other disciplines or institutions. Second, the implementation period was relatively short, consisting of only three meetings, which prevents the assessment of the long-term retention of social adaptation skills. Third, the specific focus on the local industrial community in the Pantura Timur region means that the current teaching materials are context-specific and may require significant cultural and contextual adaptation to be effectively replicated in regions with different industrial characteristics.

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