Needs Analysis for Developing an Experiential Field Learning Model Based on Collaborative Problem Solving in Higher Education

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Abstract
Higher education should be able to connect academic knowledge with the real world and further enhance collaboration and problem-solving skills. This study was conducted to identify the need to develop an Experience Field Learning model based on Collaboration and Problem Solving at three State Islamic Universities in Kalimantan. This study employs a needs analysis design using a mixed-methods approach to examine existing learning practices and identify the need to develop an experience-based field learning model. This research was conducted in several education study program at these universities. Participants were students and faculty members involved in environmental and field-based learning, selected purposively based on their relevant academic experiences. Collecting data through questionnaires, interviews, observations, and a review of curriculum documents involving students and faculty. The data were described quantitatively and interpreted thematically using qualitative methods to reveal current learning conditions, the characteristics of the desired model, and implementation requirements. The research findings indicate that instruction within the studied programs at several State Islamic Universities in Kalimantan has incorporated discussions, assignments, and practical activities; however, field experiences have not yet been fully structured as an integral part of the learning process. Students need more contextual learning through direct experience, utilization of local environments and resources, identifying real problems, collaboration, reflection, and application of concepts in field contexts. These findings serve as the basis for developing an Experience-Based Field Learning model that integrates concrete experience, collaborative problem-solving, reflection, the use of local resources, and digital technology support.

1. Introduction

Higher education is required to produce graduates who are able to apply knowledge in dealing with complex and contextual problems and have 21st-century skills. These demands are important for aspiring scientists and teachers because professional practice requires not only mastery of concepts, but also the ability to observe, interpret evidence, communicate, collaborate, solve problems, and make decisions. Therefore, the learning process in higher education needs to provide learning experiences that enable students to connect academic knowledge with real situations and develop competencies that are relevant to professional needs. Experience-oriented learning is important because it provides students with the opportunity to learn through direct involvement in meaningful situations, not just through conceptual reception of information.

One relevant approach to support these needs is experiential learning, which places experience as a source of knowledge through the process of reflection, conceptualization, and action (Priatmoko & Dzakiyyah, 2020; Priyandari et al., 2020). Furthermore, experiential learning involves context-rich experiences, reflective observation, conceptual inquiry, and pragmatic experimentation (Morris, 2020). Thus, experience is not positioned as an additional activity in learning, but as part of the process of knowledge formation and competency development. In the context of higher education, experiential learning environments vary in terms of authenticity, structure, and student agency. In addition, the role of the lecturer facilitator, preparation, reflection, interaction with peers and lecturers, and the opportunity for students to have agency in group work

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are important characteristics that need to be considered in designing an experience-based learning environment (Duchatelet et al., 2024).

The surrounding environment can be an important source of learning experiences, particularly in biology, environmental studies, and teacher education. Direct engagement with organisms, ecosystems, and environmental issues enables students to make observations, collect evidence, and interpret the relationships between various components in real contexts. In teacher education, field experiences also offer students opportunities to interact with schools, families, communities, and learners with diverse characteristics. Such contexts provide authentic experiences that are difficult to fully replicate through classroom-based instruction. Therefore, field-based experiential learning has the potential to connect academic knowledge to real-world situations while providing space for students to investigate, reflect, and apply knowledge.

However, field experience does not automatically result in meaningful learning experiences. Literature suggests that the effectiveness of authentic learning environments is influenced by the balance between authenticity, structure, and student agency (Duchatelet et al., 2024). Learning situations that are too open can provide space for students to make decisions independently, but also have the potential to cause difficulties when students have limited prior knowledge or do not receive adequate support. Conversely, excessive structure and guidance may limit opportunities for students to develop agency. Therefore, field experience-based learning design needs to consider student characteristics, learning objectives, level of activity structure, role of lecturer, and form of support provided during the learning process.

In addition to field experience, developing collaborative and problem-solving competencies requires learning activities that enable students to work in a structured manner to address authentic problems. Collaborative problem solving places students in the process of sharing information, building shared understanding, evaluating alternatives, and making decisions collectively. A meta-analysis by Xu et al. (2023) on 36 studies showed that collaborative problem solving-based learning has a positive influence on critical thinking skills, with effectiveness influenced by learning characteristics such as type of learning, duration, group size, field of study, and learning scaffold. These findings indicate that collaboration in learning is not sufficiently realized through group formation, but needs to be designed through activities and support that enable students to interact, share knowledge, evaluate information, and solve problems together.

The integration of field experiences with collaborative problem solving has the potential to create a more authentic and contextual learning environment. Field experiences provide real-world situations and problems that can be the object of investigation, while collaborative problem solving provides a mechanism for students to build shared understanding and formulate solutions to these problems. This integration also enables the learning process to progress from concrete experience to reflection, analysis, decision-making, and action. In this way, students not only gain experience in a real environment, but also learn to use evidence and academic knowledge to understand and respond to problems collaboratively.

Although research on experiential learning, authentic learning, field-based learning, and collaborative problem solving has grown, the literature still shows variation in the characteristics and design of learning experiences. Duchatelet et al. (2024) showed that research on experience-based learning environments uses a combination of diverse design elements, while the relationship between the combination of these elements and certain learning outcomes still requires further study. Meanwhile, duc et al. (2023) highlight the need to consider factors such as group size, learning duration, field of study, and learning scaffolds in collaborative problem-solving contexts. Consequently, there remains a need to identify appropriate learning characteristics when field experiences, reflection, collaboration, and problem-solving are integrated into a single learning environment.

This gap shows that the development of learning models is not sufficient if it is only based on the synthesis of theories and previous research results, but also needs to consider the conditions and needs of users in the context of its application. Needs analysis is an important stage in obtaining empirical information regarding the ongoing learning conditions, students' learning experiences, lecturers' perspectives and readiness, the characteristics of the required field experience, the need for collaboration and problem solving, and the forms of learning support required. The results of the needs analysis can be the basis for determining relevant components, stages, activities, support and assessments in the learning model to be developed. With this approach, the resulting model not only has a theoretical basis, but also is appropriate to the needs and characteristics of the learning context.

Given the existing gap, the novelty of this research lies in the use of needs analysis as an empirical basis for designing a field experience-based learning model that integrates authentic experience, reflection, collaboration, and problem solving. The novelty of the research is not directed at simply testing the effectiveness of an existing model, but at mapping the needs of students and lecturers to determine the characteristics of models that are appropriate to the learning context in study programs related to biology, the environment, and teacher education. The results of this mapping then become the basis for determining the components and

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characteristics of the model which are aimed at supporting the development of students' collaborative and problem-solving competencies.

Based on the description, this study aims to analyze the needs of students and lecturers as a basis for developing a field experience-based learning model to improve students' collaboration and problem-solving competencies. The needs analysis is directed at identifying the ongoing learning conditions, the need for field experience, the characteristics of collaboration and problem solving required, and relevant forms of learning support as a basis for designing the model.

2. Method

This study uses a needs analysis design with a convergent mixed-methods design approach to examine ongoing learning practices and identify the need for developing an experience-based field learning model. This approach was chosen because it allows quantitative and qualitative data to be collected in a relatively similar period, analyzed separately, and then integrated to gain a more comprehensive understanding of participants' experiences, perceptions, constraints, and learning needs (Creswell & Plano Clark, 2018). Quantitative data is used to describe general trends in student perceptions and needs, while qualitative data is used to provide a more in-depth explanation of learning practices, institutional readiness, and model development needs from the perspective of students and lecturers.

The research was conducted at the Faculty of Tarbiyah and Teacher Training at three State Islamic Universities in Kalimantan. The study involved 50 participants, comprising 43 students and 7 lecturers. Participants were selected using purposive sampling techniques based on their involvement and experience in courses related to environmental education, experiential learning, and/or field learning activities. Student selection was based on the following inclusion criteria: (1) active student status in the study programs serving as research sites; (2) having completed or currently taking courses that incorporate environmental education content or field-based learning activities; (3) possessing experience in relevant activities such as observations, practical work, field studies, environmental projects, or contextual learning; and (4) willing to participate voluntarily in research. Students who had never taken a relevant course or learning activity were not included as participants. Meanwhile, the inclusion criteria for lecturers include: (1) having the status of lecturer in the study program being researched; (2) have taught or are currently teaching courses related to environmental education, field learning, or experience-based learning; (3) have experience designing, implementing, or evaluating field learning activities; and (4) willing to participate in research interviews. The selection of seven lecturers was carried out purposively to obtain information from teachers who have direct experience in implementing the learning that is the focus of the needs analysis. The representation of participants from the three universities was also taken into account so that the data reflected the variation in institutional contexts.

Research data were collected through questionnaires, semi-structured interviews, and document analysis. The use of multiple data collection techniques was intended to enable the triangulation of sources and methods, thereby enhancing the credibility of the needs analysis results (Cohen et al., 2018). A questionnaire was administered to 43 students to obtain quantitative data regarding their experiences and perceptions of ongoing learning and the need for experiential field learning. The questionnaire uses a Likert scale, with four response categories ranging from 1 to 4. It also includes several open-ended questions. The questionnaire items were developed based on a number of main indicators, namely: (1) Environmental education and awareness, (2) Field learning experience, (3) Experience-based learning, (4) Collaboration and interaction, (5) Problem-solving skills, (6) Learning practices and methods used, (7) Readiness of resources and institutions, (8) Partnerships and learning locations, (9) Learning assessment, (10) Barriers and development needs. Before being used in primary data collection, the questionnaire was tested for content validity through expert judgment by experts who have competence in the fields of education, learning, and/or environmental education. Validators assessed the relevance, clarity, indicator representativeness, and linguistic appropriateness of each item.

Semi-structured interviews were conducted primarily with lecturers and, if necessary to deepen the questionnaire findings, could involve selected students representing a variety of learning experiences. Student informants were selected based on the principle of "information-rich cases"—for instance, students with extensive or limited fieldwork experience, or those whose responses indicated a need for further explanation. Document analysis was performed on relevant academic and institutional materials, such as semester lesson plans (RPS), course descriptions, modules or teaching materials, and other supporting documents. This analysis focused on the presence of learning objectives related to environmental education, fieldwork activities, experiential approaches, collaboration, problem-solving, assessment methods, and institutional support. Documentary data served to verify the alignment between participant perceptions and the learning as planned and implemented, while also acting as a source for triangulating questionnaire and interview data.

Quantitative data from the questionnaire were analyzed using descriptive statistics, especially the frequency, percentage and distribution of responses on each indicator. The analysis was conducted to determine the tendencies of experiences, perceptions, obstacles, and the level of student needs for each component of

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experience-based field learning. The results are presented in diagrams to facilitate interpretation. Interview and document data were analyzed qualitatively using an interactive data analysis process comprising data condensation, data display, and conclusion drawing and verification (Miles et al., 2014). The credibility of the qualitative data was reinforced through source and method triangulation.

The integration can be presented in the form of a joint display comprising: (1) needs indicators; (2) quantitative findings; (3) qualitative findings; (4) triangulation or integration results; and (5) implications for model development. These integration results are then used to determine the gap between the actual learning conditions and the desired conditions. The identified gap serves as the basis for establishing key needs and formulating the characteristics of the experience-based field learning model to be developed. Thus, decisions regarding the need for model development are not based solely on the percentage of questionnaire results or on the individual opinions of participants, but on the synthesis of multiple data sources. This synthesis is subsequently translated into design requirements, including the need for authentic field activities, structured experience-based learning stages, collaboration, real-world environmental problem-solving, reflection, partnerships with the community or relevant institutions, and an assessment system aligned with the characteristics of field learning. The research was conducted with attention to the principles of research ethics which include informed consent, voluntary participation, confidentiality, anonymity, and protection of participant data.

3. Results and Discussion

3.1. Results

A needs analysis was conducted to identify current instructional conditions, the gap between the learning experiences students actually receive and those expected, and the needs of both students and lecturers regarding the development of an experience-based field learning model. Data were obtained through student (n = 43) and lecturer (n = 7) questionnaires, interviews with lecturers and/or students, and learning documentation at several State Islamic Universities in Kalimantan. The results are presented based on several main aspects of needs analysis, namely (1) current field learning experiences, (2) use of the environment as a learning resource, (3) need for real experience, (4) collaboration and problem solving, (5) dominance of theoretical learning, (6) learning methods used, (7) gaps and student needs, and (8) readiness and support for implementation.

3.1.1. Current Field-Based Learning Experiences

The first aspect analyzed was the extent to which students had engaged in learning experiences outside the classroom. Questionnaire results indicate that while the majority of students had participated in field-based learning, the frequency of such participation varied. Among the 43 students, 58.1% reported participating in out-of-classroom learning frequently, 20.9% very frequently, and 20.9% rarely. These data are presented in Figure 1 below.

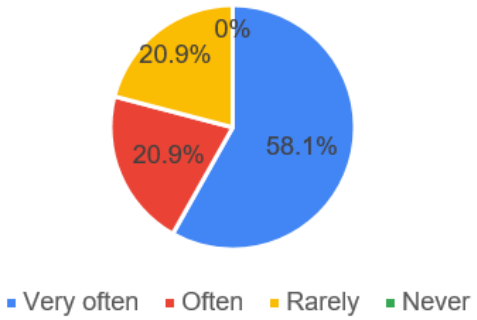


Figure 1. Frequency of Out-of-Class Learning or Field Activities Participated in by Students

These findings show that 79% of students participated in out-of-classroom learning activities at least frequently. However, the data do not directly demonstrate that these activities were implemented as structured, experience-based learning. Consequently, a distinction must be made between the frequency of field activities and the quality and structure of the learning experiences gained by the students. Further findings from interviews and documentation reveal that the available field experiences were not fully oriented toward a systematic process involving concrete experience, reflection, conceptualization, and the application of problem-solving. Thus, the emerging need is not merely to increase the frequency of field activities, but to develop a field-based learning structure capable of transforming field activities into purposeful learning experiences.

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3.1.2. Utilizing the Environment as a Learning Resource and Medium

The next aspect concerns the students' need to utilize the surrounding environment as a learning resource. Questionnaire results indicate strong support for incorporating the surrounding environment into coursework assignments. Of the 43 students, 53.5% strongly agreed, 44.2% agreed, and 2.3% somewhat disagreed that the surrounding environment should be utilized as a learning medium for coursework, as shown in Figure 2.

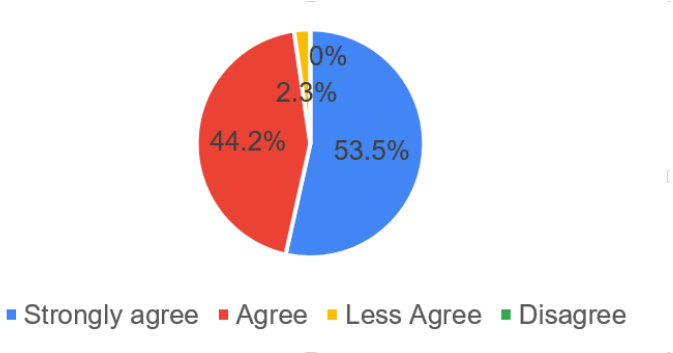


Figure 2. Student Responses Regarding the Use of the Surrounding Environment as a Learning Medium in Their Coursework

Thus, 97.7% of respondents reacted positively to the use of the surrounding environment as a learning medium. These findings demonstrate that the real-world environment holds significant potential as a source of learning experiences, particularly for linking concepts studied in the classroom with issues that can be directly observed. The questionnaire findings are reinforced by interview results, which reveal a student need for learning activities that allow for direct observation, interaction with the environment or community, and the application of course material to real-life situations. Therefore, within the model to be developed, the surrounding environment can be positioned not merely as a location for activities, but as an authentic learning resource.

3.1.3. The Need for Real-World Field Experience

The subsequent analysis focused on students' need for learning that bridges course material with real-world experience. Questionnaire results showed a positive response from all participants. Among the 43 students, 34.9% strongly agreed and 65.1% agreed that course material should be complemented by a real-world, field-based learning approach; thus, 100% of the students either agreed or strongly agreed with this need. These findings strongly indicate that instruction focused solely on content delivery is insufficient to meet students' learning experience needs. The following Figure 3 illustrates these findings

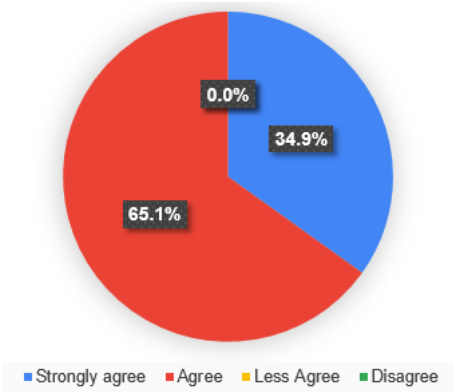


Figure 3. Student Responses Regarding the Course Material Should Be Complemented by a Real-World Field-Based Learning Approach

This requirement aligns with interview findings, which revealed that students need more opportunities to engage in hands-on activities, observe phenomena, interpret field conditions, and connect these experiences to the concepts they are studying. Consequently, the development of the model needs to place greater emphasis on concrete experiences and the application of knowledge within real-world contexts.

3.1.4. The Need for Collaborative Learning and Problem-Solving

The need for collaboration and problem-solving also garnered strong support. Among the 43 students, 32.6% strongly agreed and 67.4% agreed that collaborative learning and problem-solving should be

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implemented in the relevant courses. In other words, 100% of the students responded positively regarding the importance of these two approaches. These data are presented in Figure 4 below.

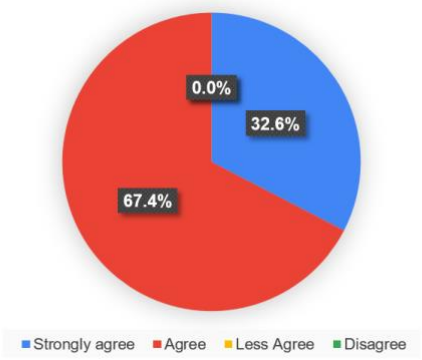


Figure 4. Student Responses Regarding the Collaborative Learning and Problem-Solving Should Be Implemented in the Relevant Courses

However, responses to other questionnaire items indicate that students' experiences with collaborative approaches have not been entirely consistent. Of the 43 respondents, 11.6% stated that they rarely utilized collaborative approaches in their environment-related studies. These findings reveal a gap between the perceived importance of collaboration and the consistency of its application in the learning experience. Consequently, the need for development lies not merely in providing group activities, but in designing activities that require students to engage in role allocation, coordination, communication, decision-making, and collaborative problem-solving.

Regarding problem-solving, interview results indicate that students still require more authentic experiences in addressing real-world issues. Students need guidance to move beyond simply receiving instructions; they must learn to identify problems, gather information or evidence, analyze causes, formulate alternative solutions, and take responsibility for the decisions they make.

3.1.5. The Gap Between Theoretical Learning and Practical Experience

One key gap identified is the persistent emphasis on theory in learning. Among the 43 students, 9.3% strongly agreed and 48.8% agreed that environmental education instruction remains overly focused on classroom-based theory; thus, 57.4% of responses reflect a perception that theoretical learning dominates. The following Figure 5 illustrates these findings.

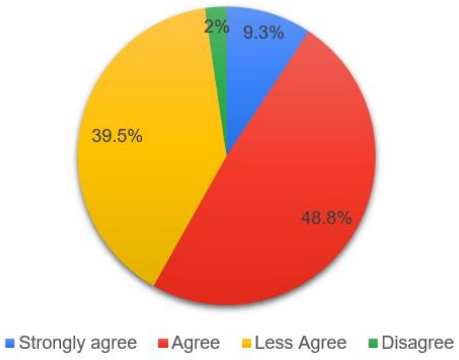


Figure 5. Student Responses Regarding the Dominance of Theory in Environment-Related Learning

These findings require careful interpretation. The data do not imply that all learning takes place solely in the classroom, as 79% of students previously reported frequently or very frequently participating in out-of-class activities. A more accurate conclusion is that the field activities conducted to date have not fully bridged the gap between conceptual learning and practical experience. Interview results and documentation were used to explain this gap. Existing field learning activities do not consistently incorporate stages that guide students from concrete experience to reflection, analysis, problem-solving, and the application of concepts. Consequently, the need for development lies in the quality, structure, and integration of field experiences, rather than merely in increasing the number of field activities.

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3.1.6. Current Teaching Methods

Questionnaire results regarding teaching methods indicate that group discussions and lectures remain frequently used in environment-related courses. These findings suggest that while instruction incorporates activities involving student interaction, these activities are not consistently linked to authentic fieldwork experiences. The following bar chart in Figure 6 shows these things.

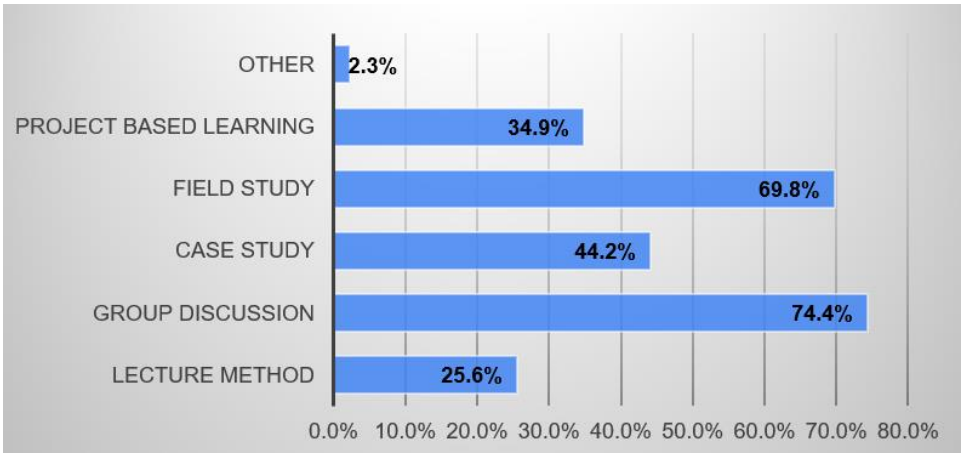


Figure 6. Teaching Methods Most Frequently Used by Instructors in Courses Related to the Environment

Data on teaching methods should be interpreted alongside findings regarding fieldwork experiences. The inclusion of discussions and fieldwork indicates that instruction is not entirely conventional. However, there is a need to integrate these methods into a more systematic learning sequence; this would ensure that discussions do not remain limited to conceptual analysis but instead stem from real-world issues encountered by students in the field. Consequently, the goal of developing a new model is not to replace existing methods entirely, but rather to integrate lectures, discussions, observations, fieldwork, reflection, and problem-solving into a coherent instructional framework.

3.1.7. Students' Need for More Authentic Learning Activities

A synthesis of data from questionnaires, interviews, and documentation reveals a need among students for more authentic learning experiences. Quantitatively, this need is evidenced by a 97.9% approval rate for utilizing the environment as a learning medium, with 100% of students expressing a need for real-world field experiences and emphasizing the importance of collaborative learning and problem-solving. Qualitative data further clarify the nature of the required experiences: direct observation, interaction with the environment or community, practical activities, the use of more creative media, and the application of concepts to understand and resolve real-world issues. These findings highlight a gap between existing learning conditions and the learning experiences students desire. Students require not merely the opportunity to step outside the classroom, but field activities that offer concrete experiences, demand active engagement, generate data or findings, and are followed by processes of reflection and problem-solving.

3.1.8. Implementation Needs and Readiness: Perspectives of Lecturers and the Institution

Interview data and documentation highlight several factors requiring attention during the model's implementation: lecturer readiness, the availability of field partners, facilities and infrastructure, evaluation systems, and the coordination of activities. Regarding lecturers, interviews reveal that some still require a better understanding of the planning, execution, and assessment of experience-based learning. These findings indicate that the model's development must be accompanied by implementation tools that help lecturers understand the learning stages, the respective roles of lecturers and students, and assessment mechanisms. Regarding partners, documentation and interviews show that suitable environments and field partners are available and have the potential to support learning; however, cooperation mechanisms are not yet fully structured to serve educational objectives. Therefore, a cooperation framework is needed to define the roles of each party, activity procedures, student access to locations, and the intended learning outcomes. Meanwhile, limitations regarding transportation facilities and field documentation, along with the need for partner coordination, are factors that must be considered in the implementation design. Consequently, the developed model needs to be realistic regarding institutional conditions, offer alternative locations or activities, and provide clear coordination mechanisms.

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Based on the overall findings, the needs analysis revealed several key gaps. Table 1 below presents the Gap between Actual and Expected Conditions.

Table 1. Gap between Actual and Expected Conditions

Aspects	Actual conditions	Expected conditions	Basis for findings	Development needs
Field experience	Most students have participated in out-of-class activities, but the experience is not yet fully structured	Field experience is an integral part of the learning process	Questionnaires, interviews, and documentation	Systematic field learning stages
Utilization of the environment	The environment has the potential to be used as a learning resource	The environment is used in a planned manner to gain concrete experience	Questionnaires	Environmental observation and exploration activities
Real-world experience	Students need a stronger connection between theory and real-world conditions	Material is applied to authentic problems	Questionnaires and interviews	Real-world problem-based learning
Collaboration	Collaboration is not always implemented consistently	Collaboration is a mandatory part of completing field assignments	Questionnaires and interviews	Group projects with clear role divisions
Problem solving	Experience with real-world problems is still limited	Students identify, analyze, and solve problems	Interviews and documentation	Problem-solving assignments based on field cases
Theory orientation	Some respondents see a dominance of theory	Theory and practical experience are integrated	Questionnaires, interviews, and documentation	Experience-reflection-conceptualization-application cycle
Learning methods	Lectures and discussions are still dominant	Active methods integrated with field experience	Questionnaires	Combination of discussion, observation, projects, reflection, and Practice
Lecturer Readiness	Some lecturers require reinforcement in experiential learning	Lecturers are able to design and assess experiential learning	Interviews	Model guidance and lecturer training
Field partners	Partners are available, but collaboration is not yet structured	Partners have clear roles and procedures	Interviews and documentation	Framework for collaboration and role allocation
Facilities and coordination	Limited facilities and coordination	Activities have clear logistical support and schedules	Interviews and documentation	Field modules, flexible schedules, and coordination systems
Assessment	Authentic assessment is not optimal	The process and product of the experience are assessed authentically	Interviews and documentation	Rubric for observation, collaboration, problem-solving, and reflection

Overall, the results of the needs analysis indicate that the main need is not simply to increase the frequency of out-of-class activities, but rather to develop a structured, contextual, collaborative, and problem-solving-

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oriented field learning model based on experience. This model is expected to connect students' concrete experiences with the process of reflection, concept development, and application of knowledge in solving real problems. These findings are the basis for determining the characteristics and components of the learning model that will be developed in the next research stage.

3.2. Discussion

The research findings indicate a strong need for systematic learning related to the surrounding environment. A total of 97.7% of students agreed or strongly agreed that the local environment should be used as a learning medium, while all respondents supported an approach based on direct field experience. These findings reveal a gap between the contextual potential of the course and the learning experiences students have gained so far. This need may arise because the local environment has more concrete characteristics and is closer to students' lives but has not been fully utilized as an integral part of the learning process. Thus, the need for field experience not only indicates students' preference for activities outside the classroom but also indicates the need to connect academic concepts with directly observable objects, phenomena, and issues. This preference aligns with experiential learning theory, which states that knowledge is developed through concrete experiences, reflection, conceptualization, and further experimentation (Kolb, 1984). Academic concepts become directly observable within social, ecological, and institutional realities; this enhances relevance and student motivation (Fedesco et al., 2020). It also enables students to apply concepts, solve problems, and demonstrate professional competence in authentic situations (Villarroel et al., 2020).

Somewhat surprisingly, 79% of students reported that they often or very often participated in learning activities outside the classroom. However, many of them still believe that what they learn is not practical enough and not optimal for solving environmental problems. This situation indicates that the frequency of field activities does not always have a direct correlation with the quality of experiential learning. In other words, the main problem identified was not simply a lack of field activities, but the pedagogical quality of those experiences. Students can often be in the field, but if the activities only consist of visits, observations, or information gathering without problems to be solved, these activities will not necessarily result in the transformation of experience into knowledge. Visits or descriptive, instructor-centered observations can be less effective if they are not grounded in meaningful problems, structured reflection, and opportunities to test developed solutions. (Radović et al., 2023) emphasize that authenticity, reflection, and collaboration are the fundamental principles of experiential learning. Thus, the model developed cannot simply shift learning activities from the classroom to the field; it must link field experiences with guided observation, reflective dialogue, theoretical interpretation, solution development, and concrete follow-up. Experiences without reflection may generate activity but do not always lead to deep learning (Kong, 2021). This finding also clarifies the contribution of the model design, namely changing field activities from incidental activities into a cycle of learning experiences consisting of concrete experiences, investigations, reflections, conceptual reconstructions, solution development, and follow-up testing.

A total of 58.1% of respondents felt that environmental education was too theoretical. This finding is supported by the high percentage of lectures and group discussions used during the learning process. These methods are excellent for conveying basic knowledge. However, if overused, they limit students' ability to cope with uncertainty, negotiate constraints, and make decisions in authentic contexts. A lack of challenges and limited relevance to real-world work situations also indicate that students are not yet fully prepared to handle professional complexities. Authentic learning becomes meaningful when students engage in realistic tasks, consider diverse perspectives, apply disciplinary tools, and produce outcomes that hold value beyond merely meeting academic requirements (Nachtigall et al., 2022).

This gap between theory and practice is relevant to both academic programs, which serve as the context for this research. For example, biology students should be given the opportunity to study ecological conditions, environmental changes, biodiversity, and community-based conservation through empirical evidence obtained firsthand. Meanwhile, students in Early Childhood Islamic Education need real-world experiences related to various educational facilities, institutional cultures, community expectations, and children's behavior in real-life educational settings. Conditions that are not fully represented in textbooks—due to resource limitations, differences in institutional characteristics, and unpredictable human and environmental responses—can serve as learning opportunities that encourage students to interpret evidence, revise assumptions, develop empathy, and formulate realistic solutions. Therefore, experience-based learning is well-suited for developing competencies that integrate cognitive, procedural, and affective aspects simultaneously (Villarroel et al., 2020). Thus, the identified needs have cross-disciplinary relevance, yet their implementation must remain sensitive to disciplinary characteristics. Biological environments offer opportunities for inquiry based on ecological evidence, whereas early childhood education contexts present social, institutional, and human development issues. These differences imply that the model needs to provide a common framework at the process level while remaining sufficiently flexible regarding context, issues, and learning outcomes.

All respondents stated that learning was based on a collaborative and problem-solving approach. However, 11.6% of students said that the collaborative approach was rarely applied in learning related to the

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environment. Weaknesses were also revealed in group coordination, role distribution, and conflict resolution. This is because the formation of study groups does not automatically lead to effective collaboration. Teamwork must have a clear structure regarding shared goals, role negotiation, communication, monitoring, feedback, and collective accountability. Previous research also indicates that collaborative competencies must be developed intentionally and systematically, rather than assumed to emerge automatically through repeated group assignments (De Prada et al., 2022). These findings are significant because there is a distinction between the mere presence of "group work" and the development of collaborative competence. Although all respondents acknowledged the use of collaborative and problem-solving approaches, the fact that 11.6% of students reported that collaborative methods were rarely implemented alongside issues regarding coordination, role distribution, and conflict resolution indicates that existing collaborative practices are not yet fully structured as learning experiences. This aligns with the view of De Prada et al. (2022) that collaborative competence requires intentional development rather than mere repeated exposure to group tasks.

Field experience is particularly promising in this regard because it involves authentic problems and interdependent tasks that lead to tangible results. Students must participate in the process of collectively defining problems, collecting and interpreting field data, comparing alternative solutions, dividing responsibilities, managing differences of opinion, and collectively taking responsibility for the decisions made. The fact that some students still tend to rely on instructors for guidance also highlights the need for a gradual transfer of responsibility. Initially, instructors can provide tools for problem formulation and protocols for fieldwork. However, this support should be gradually reduced as students' ability to conduct independent investigations improves. Meaningful, collaborative problem-solving tasks applicable to real-world situations can enhance prospective teachers' project competencies and professional readiness (Rofik et al., 2022). Based on these findings, the specific contribution of the proposed model lies not merely in the use of group work, but in the organization of teamwork through stages that enable students to progressively assume responsibility for the investigation process. An initial structure is necessary to reduce task ambiguity and student dependency, while the gradual reduction of scaffolding is essential for fostering agency. Thus, the model integrates teamwork and problem-solving as interconnected processes: authentic problems serve as the catalyst for collaboration, collaboration acts as the vehicle for analysis and decision-making, and reflection is employed to evaluate the quality of both the process and the solution.

Reflection is another element that must occur at both the individual and group levels. Therefore, when assessing the solutions they produce, students need to evaluate not only the final solution but also their use of evidence, the roles they played, conflict management, and the justification for their decisions. Structured self-assessment and peer assessment can enhance collaborative awareness when linked to goal-setting and reflection on the group work process (Eshuis et al., 2019). Thus, the model to be developed must include a team work contract, role assignments agreed upon by all group members, records of the group's progress, peer feedback, and post-field activity reflection. This will directly address the unresolved coordination and conflict issues revealed by the needs analysis. This component responds directly to identified needs while reinforcing the element of agency within experiential learning. Students do not merely follow the lecturer's instructions; instead, they are given the scope to agree on roles, monitor progress, provide feedback, and evaluate their own contributions. Consequently, reflection within this model is not positioned as a separate, final stage, but rather as a mechanism for linking experience, teamwork, problem-solving, and the development of responsibility for one's own learning.

The successful implementation of experience-based field learning does not depend solely on student enthusiasm. Instructors need support in designing, facilitating, and evaluating experience-based learning (Buchwald et al., 2023; Cydis et al., 2021; Napier & Wada, 2024); field partners require clear agreements regarding responsibilities, schedules, supervision, and activity outcomes (Akilova et al., 2021; Jeyakumaran et al., 2024; Tavanti et al., 2017). The availability of transportation for fieldwork, limited class time, and poor coordination can lead to fieldwork being sidelined as an incidental activity (Bellas et al., 2022; Hindarto, 2024; Sabila et al., 2023; Salway et al., 2022; Sembiring, 2015; Yuliyanto et al., 2022) . Research on interdisciplinary experiential learning programs also reveals that environmental resources, stakeholder capacity, program objectives, and evaluation mechanisms are other key factors that can either support or hinder program implementation (Eggiman-Ketter et al., 2024). Thus, institutional support is essential for the sustainable integration of environmental potential and local communities into the curriculum. In the context of this study, this requirement indicates that the model design must not focus solely on student activities but also needs to take implementation conditions into account. This means the model must be realistic regarding constraints related to time, coordination, transportation, and partner capacity. Strategies such as the use of field modules, digital coordination, and formal work agreements with partners are crucial, as they can reduce the coordination burden without depriving students of the opportunity to make independent decisions.

The assessment system must also incorporate a shift in emphasis from theoretical exams toward more practical, authentic performance-based assessments. Written tests can only measure one aspect of students' abilities conceptual understanding but are not yet capable of assessing their ability to negotiate roles, gather evidence, and communicate solutions to problems (Iacullo, 2017; Saifurrisal & Nusantara, 2023) . Written exams

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do not reflect students' true abilities. Therefore, fieldwork must be assessed through observation notes, reflective journals, presentations to partners, and analytical rubrics that evaluate collaboration and problem-solving. Experience-based projects will expose the assessment process to conditions and challenges that are more or less the same as those encountered in actual professional practice (Crawford et al., 2023). Authentication should not only be interpreted from the perspective of work readiness but also as an effort to integrate academic learning with social responsibility and meaningful participation in society (McArthur, 2023). Thus, changes in assessment are a logical consequence of changes in learning objectives. If the model aims to foster collaboration and problem-solving, the assessment must also capture the processes that generate these competencies, rather than merely the final answer. Performance-based assessments, reflective journals, presentations to partners, and analytical rubrics allow for the observation and authentic evaluation of processes such as the use of evidence, role distribution, communication, decision-making, and the quality of solutions.

The consistency of the findings obtained through questionnaires, interviews, and documentation helps build a structured and robust experiential field-based learning model. Authentic contextual problems, engagement of field partners, collaborative projects, guided reflection, conceptual reconstruction, solution testing, and authentic assessment are proposed as components of this model. A synthesis of the findings indicates that the identified needs do not exist in isolation but form an interconnected set of pedagogical requirements: students need authentic contexts for learning, structure to manage complexity, agency to assume responsibility, teamwork to construct shared knowledge, and problem-solving skills to apply that knowledge in generating decisions and solutions. This study recommends digital technology for flexible coordination and scheduling to improve communication during the implementation of activities. The use of field modules is recommended to clarify procedures without compromising students' autonomy in learning. High student interest and the availability of partner institutions are conditions that support the implementation of this model. However, its implementation still requires training for instructors, limited pilot testing, and ongoing evaluation to ensure the model's effective implementation. Thus, the specific contribution of the proposed model lies not merely in combining established learning strategies, but in structuring the functional relationships among these components. Authenticity provides the problem context; structure offers scaffolding; agency allows for decision-making; teamwork organizes the social learning process; problem solving directs activities toward resolving the issue; and reflection and authentic assessment ensure that the experience is transformed into learning and demonstrable competence.

3.3. Implications

The implications of this research are that it serves as a baseline for developing an Experiential Field Learning model oriented toward collaborative and problem-solving competencies in students. The results of the needs analysis can serve as a basis for educators, curriculum developers, and educational institutions in designing contextual learning. Furthermore, this study can serve as a data reference for further research, particularly in testing and evaluating the developed learning model.

3.4. Limitations

The implications of this research are that it serves as a baseline for developing an Experiential Field Learning model oriented toward collaborative and problem-solving competencies in students. The results of the needs analysis can serve as a basis for educators, curriculum developers, and educational institutions in designing contextual learning. Furthermore, this study can serve as a data reference for further research, particularly in testing and evaluating the developed learning model.

4. Conclusion

A needs analysis indicates that instruction within the studied programs at several State Islamic Universities in Kalimantan has incorporated discussions, assignments, and practical activities; however, field experiences have not yet been fully structured as an integral part of the learning process. Students need more contextual learning through direct experience, utilization of local environments and resources, identifying real problems, collaboration, reflection, and application of concepts in field contexts. These findings serve as the basis for developing an Experience-Based Field Learning model that integrates concrete experience, collaborative problem-solving, reflection, the use of local resources, and digital technology support. Consequently, this research establishes the foundational needs and preliminary characteristics for the model's design, which will require further development and testing in the subsequent research phase to determine its feasibility and effectiveness.

Author Contributions

All authors have equal contributions to the paper. All the authors have read and approved the final manuscript.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript.

References

Akilova, M., Donovan, A., Miles, B., Phillips, N., & Verdooner, E. (2021). Theory is not enough! Experiential and project-based approaches to teaching international social work. *Journal of Human Rights and Social Work, 6*(3), 193–203. https://doi.org/10.1007/s41134-021-00165-1

Bellas, H. C., Arcuri, R., Ferreira, D. de S., Bulhões, B., Masson, L. P., Vidal, M. C., de Carvalho, P. V. R., & Jatobá, A. (2022). Complex systems design based on actual system functioning: Coping with variability in a national water ambulances service. *Work, 73*(Suppl. 1), S265–S277. https://doi.org/10.3233/WOR-211211

Buchwald, D. S., Rogers, M. H., Rose, B. A., Bresnahan, B. W., Devine, B., LeResche, L., Nelson, L. A., Patrick, D. L., Lavallee, D. C., Garrison, M. M., White, A. A., & Kessler, L. G. (2023). Evaluation of an experiential training program in patient-centered outcomes and comparative effectiveness research for diverse researcher communities and health care organizations. *Journal of Clinical and Translational Science, 7*(1), Article e81. https://doi.org/10.1017/cts.2023.36 cambridge.org

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Crawford, R., Jenkins, L. E., & Wan, L. (2023). Experiential learning projects as assessment in initial teacher education. *Australian Journal of Teacher Education, 48*(1), 37–54. https://doi.org/10.14221/1835-517X.5787

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Cydis, S., Haria, P., & Meyers, S. (2021). Building preservice teacher's essential skill competencies through a situated learning approach. *New Directions for Teaching and Learning, 2021*(166), 93–122. https://doi.org/10.1002/tl.20453

De Prada, E., Mareque, M., & Pino-Juste, M. (2022). Teamwork skills in higher education: Is university training contributing to their mastery? *Psicologia: Reflexão e Crítica, 35*, Article 5. https://doi.org/10.1186/s41155-022-00207-1

Duchatelet, D., Cornelissen, F., & Volman, M. (2024). Features of experiential learning environments in relation to generic learning outcomes in higher education: A scoping review. *Journal of Experiential Education, 47*(3), 400–423. https://doi.org/10.1177/10538259231211537

Eggiman-Ketter, J., Derrough, B., Wolfe, D. L., & Unger, J. (2024). Enablers and barriers to implementing an interdisciplinary experiential learning program for university students in a Canadian rehabilitation centre. *Frontiers in Rehabilitation Sciences, 5*, Article 1336559. https://doi.org/10.3389/fresc.2024.1336559

Eshuis, E. H., ter Vrugte, J., Anjewierden, A., Bollen, L., Sikken, J., & de Jong, T. (2019). Improving the quality of vocational students' collaboration and knowledge acquisition through instruction and joint reflection. *International Journal of Computer-Supported Collaborative Learning, 14*(1), 53–76. https://doi.org/10.1007/s11412-019-09296-0

Fedesco, H. N., Cavin, D., & Henares, R. (2020). Field-based learning in higher education: Exploring the benefits and possibilities. *Journal of the Scholarship of Teaching and Learning, 20*(1), 65–84. https://doi.org/10.14434/josotl.v20i1.24877

Hindarto, D. (2024). Enhancing supervised learning through empirical enrichment using style transfer generative datasets. *Sinkron: Jurnal dan Penelitian Teknik Informatika, 8*(1), 485–494. https://doi.org/10.33395/sinkron.v9i1.13229 jurnal.polgan.ac.id

Iacullo, G. (2017). Problem-based learning as a pedagogical approach for preparing statistics graduates. In *Teaching statistics in a data rich world: Proceedings of the 2017 IASE Satellite Conference*. International Association for Statistical Education. https://doi.org/10.52041/srap.17313

Jeyakumaran, T., Eggiman-Ketter, J., Spadzinski, A., & Wolfe, D. L. (2024). Identifying strategies and related principles supporting a co-design approach in an assistive device service delivery and research platform. *Frontiers in Rehabilitation Sciences, 5*, Article 1364016. https://doi.org/10.3389/fresc.2024.1364016

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

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ISSN: 2797-3174

Kong, Y. (2021). The role of experiential learning on students' motivation and classroom engagement. *Frontiers in Psychology, 12*, Article 771272. https://doi.org/10.3389/fpsyg.2021.771272

McArthur, J. (2023). Rethinking authentic assessment: Work, well-being, and society. *Higher Education, 85*, 85–101. https://doi.org/10.1007/s10734-022-00822-y

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications.

Morris, T. H. (2020). Experiential learning—A systematic review and revision of Kolb's model. *Interactive Learning Environments, 28*(8), 1064–1077. https://doi.org/10.1080/10494820.2019.1570279

Nachtigall, V., Shaffer, D. W., & Rummel, N. (2022). Stirring a secret sauce: A literature review on the conditions and effects of authentic learning. *Educational Psychology Review, 34*(3), 1479–1516. https://doi.org/10.1007/s10648-022-09676-3

Napier, P., & Wada, T. (2024). Bridging the skills gap: The design education landscape with AI and experiential learning. *Design Management Journal, 19*(1), 19–30. https://doi.org/10.1111/dmj.12094

Priatmoko, S., & Dzakiyyah, N. I. (2020). Relevansi kampus merdeka terhadap kompetensi guru era 4.0 dalam perspektif experiential learning theory. *At-Thullab: Jurnal Pendidikan Guru Madrasah Ibtidaiyah, 4*(1), 1–15. https://doi.org/10.30736/atl.v4i1.120

Priyandari, T. Y., Astina, I. K., & Utomo, D. H. (2020). Pengaruh model pembelajaran experiential learning terhadap kemampuan pemecahan masalah mahasiswa geografi. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 5*(1), 15–20. https://doi.org/10.17977/jptpp.v5i1.13117

Radović, S., Hummel, H. G. K., & Vermeulen, M. (2023). The mARC instructional design model for more experiential learning in higher education: Theoretical foundations and practical guidelines. *Teaching in Higher Education, 28*(6), 1173–1190. https://doi.org/10.1080/13562517.2021.1872527

Rofik, A., Setyosari, P., Effendi, M., & Sulton. (2022). The effect of collaborative problem solving and collaborative project-based learning models to improve the project competences of pre-service teachers. *Pegem Journal of Education and Instruction, 12*(3), 130–143. https://doi.org/10.47750/pegegog.12.03.15

Sabila, F. H., Kesuma, N., & Purba, R. (2023). Penanganan dokumen ekspor batu bara di Pelabuhan Panjang pada PT. Tigade Artha Samudera Bandar Lampung. *Journal of Maritime and Education (JME), 5*(1), 449–455. https://doi.org/10.54196/jme.v5i1.99

Saifurrisal, A. H., Nusantara, T., & Sudirman. (2023). Students' numeracy in solving problem of counting rules and its scaffolding. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 12*(2), 2528–2538. https://doi.org/10.24127/ajpm.v12i2.6796

Salway, S., Mumtaz, Z., Bhatti, A., Barnes, A., Dawson, J., & Jhangri, G. S. (2022). Scaling up the "24/7 BHU" strategy to provide round-the-clock maternity care in Punjab, Pakistan: A theory-driven, coproduced implementation study. *Health Research Policy and Systems, 20*, Article 139. https://doi.org/10.1186/s12961-022-00944-w

Sembiring, J. (2015). Perencanaan partisipasi menuju keadilan sosial studi kasus inklusi sosial orang berkebutuhan khusus bagaimana memberdayakan orang berkebutuhan khusus dalam perencanaan transportasi. *Warta Penelitian Perhubungan, 27*(2), 103–116. https://doi.org/10.25104/warlit.v27i2.777

Tavanti, M., Brennan, M., & Helgeson, S. (2016). Management education for sustainable development: Integrating ecology and community values in social impact practicums. *Journal of Management for Global Sustainability, 4*(1), 75–99. https://doi.org/10.13185/2244-6893.1051 archium.ateneo.edu

Villarroel, V., Benavente, M., Chuecas, M. J., & Bruna, D. (2020). Experiential learning in higher education: A student-centered teaching method that improves perceived learning. *Journal of University Teaching & Learning Practice, 17*(5), 1–16. https://doi.org/10.53761/1.17.5.8

Xu, E., Wang, W., & Wang, Q. (2023). The effectiveness of collaborative problem solving in promoting students' critical thinking: A meta-analysis based on empirical literature. *Humanities and Social Sciences Communications, 10*, Article 16. https://doi.org/10.1057/s41599-023-01508-1

Yuliyanto, A., Muqodas, I., Khairunnisa, S. A., Febriyani, F., & Sofiasyari, I. (2022). Scientific writing guidance for elementary school teacher candidate through synchronous and asynchronous. *Jurnal Penelitian Ilmu Pendidikan, 15*(2), 137–154. https://doi.org/10.21831/jpipfip.v15i2.48257

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