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Reconstructing Entrepreneurship Learning Through a Managerial Approach Based on Local Ethnoscience

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Abstract

This study looks at how students' abilities in contextual company development are affected when entrepreneurship education is reconstructed using a management style grounded on local ethnoscience. 18 students from the 2019 cohort who took the Entrepreneurship course in the Chemistry Education programme at Universitas Sembilanbelas November Kolaka provided survey data for the study. Through direct observation and group business planning, students were introduced to fundamental entrepreneurial principles and assisted in interacting with local ethnoscientific resources, including sago, cassava, green vegetables (spinach), clove, honey, shrimp, and milkfish. Standardised questionnaire encompassing eight important markers of ethnoscientific understanding in entrepreneurship was used to gather data. To understand the findings, descriptive and mapping data analysis were used. The findings show that students are highly engaged and competent in locating, evaluating, and innovatively using local resources for entrepreneurship. The most motivating resources were honey, cassava, and shrimp, and students showed great aptitude in contextual business design, product creation, and team-based entrepreneurial analysis. The main results support the idea that including local ethnoscience into entrepreneurship education increases both practical entrepreneurial abilities and cultural and ecological sensitivity. This concept is a potential educational framework for creating entrepreneurs who are innovative, locally rooted, and prepared for the future.

Keywords: Entrepreneurship_Learning; Managerial; Approach; Local; Ethnoscience.

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1. Introduction

It is anticipated that entrepreneurship education would shift from theoretical instruction to equipping students with contextualised, locally grounded problem-solving skills in response to the ever-increasing needs of the 21st-century labour market and the more complicated global concerns (Di Paola et al., 2023; Tiberius & Weyland, 2023). Accordingly, traditional teaching methods sometimes fall short of bridging the gap between entrepreneurial theory and practical application, especially in rural and semi-urban regions like South-east Sulawesi's Kolaka Regency. Rebuilding entrepreneurial education using a management approach based on local ethnoscience a framework that is resource-oriented and culturally sensitive, bringing education into line with the socioeconomic and ecological resources of the area is a revolutionary option (Asif et al., 2025; Zheng & Chen, 2025).

Traditional customs, indigenous knowledge, and wildlife abound in Kolaka. Local communities have a wealth of information on sustainable resource use that has been passed down through the centuries. This include the gathering of aquaculture items including shrimp and milkfish (bandeng), the processing of Kolaka sago, cassava, green leafy crops like spinach, clove cultivation, and beekeeping (the production of honey). In addition to being essential to the food security and economic well-being of the area, these resources represent a wealth of ethnoscientific knowledge that is still underappreciated in formal educational settings, especially when it comes to teaching entrepreneurship (He et al., 2024; Somià et al., 2024).

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The study of indigenous knowledge and practice, or ethnoscience, offers a vital foundation for developing genuine and environmentally conscious entrepreneurial thought (Bachri et al., 2024; Nisa' et al., 2024; Sudarmin et al., 2017). Students are inspired to identify, value, and create from the resources and customs around them when ethnoscience is incorporated into entrepreneurship education (Mudana, 2023; Sari et al., 2023). This localised viewpoint supports the objectives of economic empowerment and sustainable development, especially for students pursuing vocationally linked courses like Chemistry Education, where it is crucial to comprehend how raw materials are converted into products with added value.

Kolaka has a wealth of local resources with enormous entrepreneurial potential (Kusuma & Ginting, 2021; S et al., 2022; Syamsuri & Alang, 2021). Kolaka sago, for example, can be processed into flour for gluten-free baking or traditional sweets; cassava is a versatile crop that can be made into chips, fermented products, or bioplastic materials; cloves have medicinal and aromatic uses; spinach can be processed into health products in the form of powder; local honey can be used as a food product and as a wellness commodity; and shrimp and milkfish can be smoked, canned, or frozen into delicious treats. When properly created and promoted, these food-based goods might become iconic tourist mementoes (or "oleh-oleh"), boosting the local economy and advancing Kolaka's cultural identity (Djabbar & Baso, 2019; Irwandi et al., 2023; Makaffan et al., 2023).

Despite these chances, Universitas Sembilanbelas November Kolaka's present entrepreneurial education has not yet been tailored to local potential and management application, especially in the Bachelor of Chemistry Education Programme. With little investigation of regional distinctiveness and useful entrepreneurial simulations, students are frequently exposed to generic case studies and models. Lower involvement, underuse of the resources that are available, and a lost chance for local creativity are the outcomes of this separation.

The current study suggests reimagining entrepreneurship education by including a management strategy grounded on local ethnoscience. This entails creating learning models that include business simulations based on local supply chains, project-based activities using local resources, and thoughtful conversations on the sustainability, ethics, and cultural ramifications of resource usage. In addition to teaching students about manufacturing, the managerial component makes sure they learn the fundamentals of organising, planning, marketing, and assessing their entrepreneurial endeavours.

In this approach, local knowledge, or kearifan lokal, is fundamental. It serves as a link between scientific thinking and cultural awareness, enabling students to see their surroundings as a legacy that has to be preserved rather than just a means of making money. Incorporating this knowledge into entrepreneurship education will also help students develop a feeling of pride, social responsibility, and ownership.

This study will measure the extent to which the incorporation of a local ethnoscientific-managerial approach improves student understanding, engagement, and entrepreneurial intention in order to empirically evaluate the impact and efficacy of entrepreneurship learning reconstruction in the Chemistry Education Study Programme at Universitas Sembilanbelas November Kolaka. The objective is to create a revolutionary, innovation-focused, and socioculturally based paradigm of entrepreneurship education.

By promoting Kolaka's distinctive resources as significant economic and cultural capital, this research ultimately seeks to support the growth of future-ready educators and entrepreneurs who are grounded in local identity yet able to compete in larger markets.

2. Literature Review

In order to prepare future chemistry teachers to think creatively, act independently, and apply chemical knowledge in practical entrepreneurial contexts, Universitas Sembilanbelas November Kolaka's Bachelor of Chemistry Education Programme includes an Entrepreneurship course. However, a number of obstacles and restrictions presently prevent this approach from being implemented as effectively as possible.

Lack of contextual relevance is one of the primary problems; course materials frequently use generic case studies that don't accurately represent Kolaka's local economic and cultural environment (Asmiani et al., 2023; Hariyanto et al., 2022; Zulkarnain et al., 2020). Furthermore, rather than seeing entrepreneurship as a transforming talent, students typically see it as a theoretical need. Students' entrepreneurial mindsets are also undeveloped as a result of the gap between chemistry-based abilities and real-world business growth.

In order to bridge this gap, a management strategy that incorporates local ethnoscience is suggested, enabling students to participate in culturally grounded entrepreneurship that makes use of local resources and knowledge (Khusniati et al., 2023; Widiyawati et al., 2023; Yuliana et al., 2023). The process of finding opportunities, coming up with new ideas, and allocating resources to produce value through new businesses or enhancements to current systems is known as entrepreneurship (Audretsch, 2023; Avelar et al., 2024). An entrepreneur is a person who starts and runs a firm, taking on the risk and striving for expansion and sustainability (Dung et al., 2025; Panwar et al., 2025; Shukla & Gaurav, 2025). A proactive, opportunity-driven attitude that converts concepts into actions with economic, social, or cultural value is what it means to be an entrepreneur. Indigenous knowledge systems about the environment, health, agriculture, and technology that have been created over many generations by local populations are referred to as ethnoscience (Bonfanti et al., 2024; Kamaludin et al., 2024; Sitaridis & Kitsios, 2024). In the educational setting, ethnoscience-based entrepreneurship learning entails using regional resources, customs, and cultural values to cultivate creative business concepts that complement students' scientific understanding and the demands of the community.

Table 1. SWOT Analysis: Entrepreneurship Learning Through a Managerial Approach Based on Local Ethnoscience

Strengths	**Weaknesses**
✓ Rich local resources (sago, cassava, spinach, clove, honey, aquaculture)	✓ Limited exposure of students to practical business development
✓ Strong cultural identity and community traditions	✓ Lack of structured integration between chemistry content and entrepreneurship
✓ Alignment with sustainable development goals	✓ Inadequate entrepreneurial role models in education
Opportunities	**Threats**
✓ Potential to create unique, marketable products rooted in local identity	✓ Resistance to change from traditional pedagogical models
✓ Increase tourism value through “ethno-branded” souvenirs	✓ Low student confidence in entrepreneurship
✓ Government support for creative economy and local food industries	✓ Market competition from mass-produced goods

Table 1 provides information implementing entrepreneurship learning through a Managerial Approach Based on Local Ethnoscience: A SWOT analysis identifies the educational innovation's strategic benefits and possible drawbacks. Kolaka's strengths are found in its abundant and varied natural resources, which include shrimp, milkfish, cloves, spinach, sago, cassava, and honey. These resources are used as raw materials for innovative product creation. When included into entrepreneurial education, these resources give students real-world, practical experiences while encouraging pride in regional identity. Furthermore, the community's rich cultural legacy and indigenous knowledge systems (ethnoscience) offer a strong basis for economic models that prioritise sustainability and are in line with international educational objectives, such as the SDGs.

Nonetheless, a number of shortcomings need to be fixed. Students frequently don't have enough exposure to actual business settings, which results in a cursory grasp of entrepreneurship. There is a gap between academic theory and the development of practical skills since the existing curriculum does not adequately combine knowledge based on chemistry with entrepreneurial applications. Furthermore, students' enthusiasm and confidence in the feasibility of entrepreneurship as a career path may be hampered by the lack of entrepreneurial role models in the classroom.

Conversely, this strategy creates a lot of opportunities. It makes it possible to produce high-quality, culturally inspired goods that may benefit the local market as well as the travel and export industries. By sharing knowledge and fostering local innovation, ethnoscience-based entrepreneurship may help strengthen communities. With more institutional and governmental support for the creative sector, this approach fits in nicely with the goals of national development. But there are still dangers. The incorporation of ethnoscientific information into entrepreneurial curriculum may encounter resistance from traditional teaching techniques and inflexible institutional structures. Psychological obstacles that might prevent students from taking risks as entrepreneurs include poor self-esteem or a fear of failing. Additionally, without effective branding and marketing techniques, it may be challenging for locally produced items to expand into new markets due to competition from imported or mass-produced goods.

3. Research Method and Materials

Using a survey-based descriptive research approach, this study examined the educational experiences of students enrolled at Universitas Sembilanbelas November Kolaka's Entrepreneurship course for the Bachelor of Chemistry Education Programme. 18 students from the 2019 cohort were the focus of the study; they had all finished the entrepreneurship course, which had been rebuilt using a management style combined with Kolaka Regency's local ethnoscience material.

Using indigenous Kolaka resources such sago, cassava, green vegetables (spinach), cloves, honey, shrimp, and milkfish, the learning approach was created to incorporate fundamental information about entrepreneurship while contextualising the material. Students were led to see firsthand the local knowledge and possible value-added products made from these natural resources as part of the experiential learning approach. Students worked in groups to create business analyses based on their observations and experiences during the collaborative classroom sessions that followed this field-based observation.

Measuring students' comprehension of how ethnoscience is incorporated into entrepreneurship education was the main goal of this study. This was accomplished via a structured survey with eight variables intended to evaluate different aspects of ethnoscientific knowledge in the context of entrepreneurship.

Data were collected offline by distributing a structured survey questionnaire to the 18 participating students. The survey consisted of multiple items under each of the eight indicators of ethnoscientific understanding, and students were required to respond based on their reflections and learning experiences following the implementation of the reconstructed entrepreneurship course.

Table 2. Aspects, Indicators, and Results of Validity and Reliability Testing

No.	Aspect	Indicator	Validity Result	Reliability (Cronbach's Alpha)
1.	Understanding of Local Ethnoscience	Ability to identify local natural resources (e.g., sago, cassava, honey)	Valid	0.813
2.	Cultural Knowledge	Awareness of traditional knowledge and local wisdom in resource processing	Valid	0.821
3.	Entrepreneurial Awareness	Recognition of business opportunities from local materials	Valid	0.798
4.	Integration of Science and Entrepreneurship	Ability to connect chemistry concepts with business applications	Valid	0.842
5.	Innovation Capacity	Creativity in designing local product prototypes	Valid	0.827
6.	Managerial Thinking	Ability to analyze cost, benefit, and sustainability of local product ideas	Valid	0.836
7.	Collaborative Skills	Participation in group discussion and joint project planning	Valid	0.809
8.	Reflective Thinking	Critical reflection on learning experience and ethnoscientific content	Valid	0.819

The collected data were analyzed using a descriptive statistical approach. The responses were quantified and interpreted to identify patterns, tendencies, and overall levels of student understanding. The analysis involved simple frequency distributions, percentage calculations, and mean scores for each indicator. Additionally, the findings were mapped visually to highlight trends and gaps in the students' grasp of ethnoscience within the entrepreneurship learning context. This mapping allowed for clearer interpretation of how effectively the integration of local ethnoscience influenced students' comprehension and entrepreneurial mindset.

4. Results and Discussion

The findings of this study provide empirical insights into the effectiveness of reconstructing entrepreneurship learning through a managerial approach grounded in local ethnoscience. Based on the descriptive analysis of survey data from

18 undergraduate students enrolled in the Chemistry Education program, the results reveal varied yet predominantly strong levels of understanding across key indicators of ethnoscientific entrepreneurship competence.

Table 3. Descriptive Analysis Results of Students' Understanding of Entrepreneurship Learning Based on Local Ethnoscience

No.	Indicator	Mean	Standard Deviation	Minimum	Maximum	Category
1.	Identification of local resources (sago, cassava, honey, etc.)	4.56	0.51	4.00	5.00	Very High
2.	Awareness of local wisdom in processing and product-making	4.44	0.62	3.50	5.00	High
3.	Recognition of business potential in local ethnoscience materials	4.33	0.49	3.50	5.00	High
4.	Application of chemistry concepts in product innovation	4.22	0.71	3.00	5.00	High
5.	Creativity in developing product prototypes	4.39	0.50	3.50	5.00	High
6.	Business analysis skills (cost, profit, sustainability)	4.17	0.68	3.00	5.00	High
7.	Team collaboration and communication in entrepreneurship planning	4.50	0.51	3.50	5.00	Very High
8.	Critical reflection on entrepreneurial learning experiences	4.28	0.57	3.00	5.00	High
	Total Average	4.36	0.57 (avg)	—	—	High–Very High

With a mean range of 4.17 to 4.56 on a 5-point Likert scale, the findings of the descriptive study of 18 students' comprehension of entrepreneurship learning through a managerial method based on local ethnoscience show a generally high performance across all categories. This suggests that students' conceptual and practical understanding of entrepreneurial material based on Kolaka's ethnoscientific resources was improved by the redesigned learning methodology.

Student responses revealed the following strengths: Identification of Local Resources (Mean = 4.56; SD = 0.51) was the highest-scoring indicator, indicating that students were very good at identifying and naming a variety of valuable local resources that can be used to create distinctive, culturally rooted products, including sago, cassava, spinach, clove, honey, shrimp, and milkfish. Strong contextual knowledge, perhaps bolstered by firsthand field observations, is evident in this.

During group-based business planning exercises, students showed strong teamwork and communication abilities (Mean = 4.50; SD = 0.51). This implies that the collaborative classroom approach promoted group problem-solving, active peer participation, and creative synergy all of which are critical elements of entrepreneurship in the real world. Product Development Creativity (Mean = 4.39; SD = 0.50): Students shown a high degree of creativity while they were designing product prototypes using regional components. This shows a robust ideation process that is bolstered by the incorporation of chemistry-based product design and local culture.

Knowledge of Local Wisdom (SD = 0.62; mean = 4.44), The significance of incorporating indigenous knowledge into entrepreneurship education is validated by the high mean score on this criteria, which demonstrates that students internalised the cultural and traditional values ingrained in Kolaka's ethnoscience. While still falling into the "High" category, the indicator with the lowest average score and one of the higher standard deviations was Business Analysis Skills (Mean = 4.17; SD = 0.68). This suggests that while some students did well, others had trouble comprehending important business elements like pricing, cost structure, and sustainability analysis. This implies that there is a need for more robust financial literacy and strategic planning scaffolding.

Chemistry Concepts Applicable (Mean = 4.22; SD = 0.71), Responses to this signal also varied, with some students still struggling to make the connection between product creativity and theoretical chemistry understanding. There is a

gap between subject knowledge and its entrepreneurial application, as evidenced by the difficulty in converting abstract scientific principles into tangible, commercial concepts.

Although still receiving a "High" rating, reflective thinking (Mean = 4.28; SD = 0.57) shows that not all students fully participated in metacognitive reflection over their learning experience and the wider implications of ethnoscientific entrepreneurship. Future educational development in this area is crucial, especially in fostering critical thinking and self-awareness.

Overall perspective, the effectiveness of combining ethnoscience with entrepreneurial thinking within a structured, cooperative, and regionally contextualised framework is demonstrated by the total average score of 4.36 across all parameters, which falls into the "High–Very High" category. In addition to encouraging creativity, collaboration, and social significance, the teaching methodology improved students' understanding of local identity.

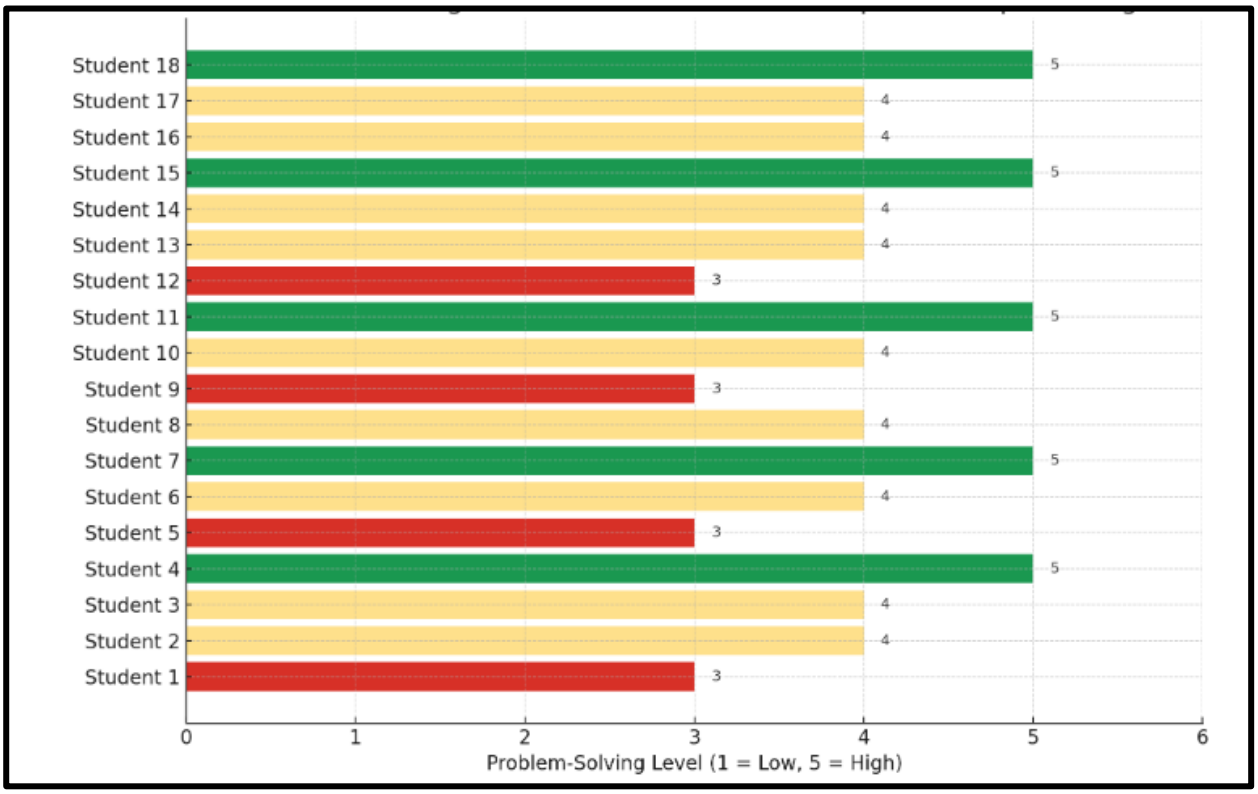

Figure 1. Problem-Solving Levels in Reconstructed Entrepreneurship Learning

The cultural, ecological, and economic realities of Kolaka Regency are fundamental to the use of local resources as the foundation for ethnoscience in entrepreneurship education. These resources reflect generations of indigenous knowledge and local wisdom in addition to the region's biodiversity and agricultural diversity. When incorporated into a structured learning model, each resource has the potential to be valuable for product development, innovation, and market-based application.

a. Kolaka Sago

For people in South-east Sulawesi, sago, a traditional staple meal made from the sago palm, has great cultural value. Sago is not just a nutrient-dense meal in Kolaka, but it also represents resiliency and regional food security. It provides students the motivation to create eco-friendly packaging materials or gluten-free food items by combining their knowledge of chemistry with their inventiveness as entrepreneurs.

b. Cassava

Widely grown in Kolaka, cassava is prized for its many uses in food processing, including chips, flour, fermented goods, and confections. Cassava, a tuber high in carbohydrates, encourages product innovation and variety. Because cassava is inexpensive, readily available, and culturally familiar, it is a great choice for students' entrepreneurial endeavours.

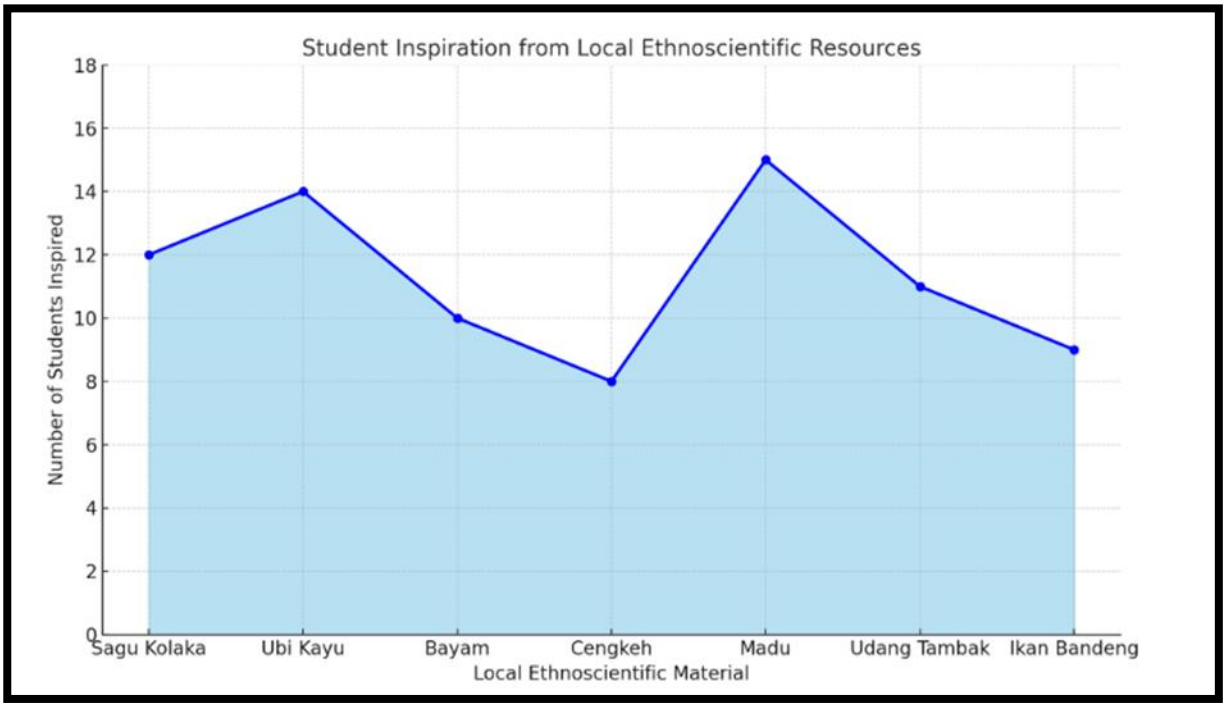

Figure 2. Student Inspiration from Local Ethnoscientific Resources

c. Spinach and other green vegetables

Leafy greens, such as spinach, are a good indicator of Kolaka's agricultural resources' nutritional worth. According to ethnoscientific viewpoints, these vegetables are associated with regional health customs and traditional diets. Students used this knowledge to develop nutritious snacks made of organic ingredients or functional food items that appeal to health-conscious consumers.

d. Cengkeh (Clove)

Clove plantations are a component of Kolaka's long-standing spice trade. Because of its well-known therapeutic and fragrant qualities, clove is a great choice for the creation of essential oils, herbal beverages, and infused food items. Students investigated clove's cultural history and bioactive ingredients to determine its additional worth.

e. Honey

In Kolaka, honey is a high-end natural commodity that is typically collected from forest bees. It represents ecological balance, traditional medicine, and the purity of nature. Honey served as a resource that encouraged students to develop novel approaches to the formulation, branding, and packaging of value-added goods such herbal beverages, skincare products, and natural sweeteners.

f. Aquaculture Pond Shrimp

The coastal areas of Kolaka are well-known for their aquaculture, especially for shrimp farming. Students are encouraged to create product lines like frozen meals, shrimp paste, or souvenirs based on fisheries since shrimp has a strong economic value and export potential. The learning method also included sustainability and resource management.

g. Milkfish

In Kolaka, milkfish are grown and consumed in large quantities. From smoked milkfish to ready-to-eat packaging options, its high protein content and processing versatility enable a variety of innovations. Students sought to improve this fish using contemporary business techniques, taking inspiration from its traditional processing methods. According to the study's findings, students' contextual knowledge and implementation of entrepreneurial principles are much improved when entrepreneurship education is reconstructed using a management method grounded in local

ethnoscience. In all eight ethnoscience-based entrepreneurial metrics, the descriptive study of 18 students enrolled in Universitas Sembilanbelas November Kolaka's Chemistry Education programme demonstrates a consistently high performance. Particularly in identifying local resources, spotting entrepreneurial possibilities in local materials, and using collaborative thinking to create company ideas based on ecological assets and local culture, students showed excellent proficiency. Local ethnoscience may work as a link between traditional knowledge and contemporary entrepreneurial activity, as demonstrated by the widespread adoption of the most stimulating materials, like Kolaka's honey, cassava, sago, and aquaculture goods.

From an assessment perspective, including local knowledge not only increased student involvement but also placed entrepreneurship in the context of their own sociocultural reality something that is sometimes absent from traditional curriculum. Disparities in students' analytical depth with regard to the sustainability and scalability of their business concepts were also revealed by the investigation, nevertheless. There was a disconnect between inspiration and methodical administrative implementation, as seen by the students' difficulties with financial planning and long-term feasibility evaluations, despite their obvious inventiveness and teamwork.

When considering these findings, it is clear that the management approach grounded on ethnoscience is transformative rather than just instructive. By incorporating cultural identity, ecological consciousness, and local significance into the curriculum, it reimagines entrepreneurial education. This method prepares students to become inventors of sustainable methods, stewards of local knowledge, and job creators. The effect of this approach may be increased in subsequent rounds by including sophisticated business modelling tools, exposure to actual market dynamics, and mentorship from local entrepreneurs. In the end, this study demonstrates that local ethnoscience is more than merely legacy; it is a potent force behind innovative teaching practices and the resiliency of the local economy.

5. Conclusion

According to the study's findings, Chemistry Education students at Universitas Sembilanbelas November Kolaka greatly benefit from the quality and contextual relevance of their entrepreneurial education when a management method based on local ethnoscience is used. Students obtained practical business ideas and a greater understanding of their local cultural and ecological riches by incorporating Kolaka's indigenous resources such as sago, cassava, green vegetables, clove, honey, shrimp, and milkfish into the educational process. According to the results, students did well when it came to locating locally marketable resources, coming up with innovative company ideas, and working together on ethnoscientific business planning. The method promotes environmental consciousness, cultural sensitivity, and economic thinking. The redesigned learning paradigm is successful in developing entrepreneurial talents that are both globally relevant and locally inspired, despite certain limits in students' advanced business modelling abilities. Thus, local ethnoscience may serve as a strategic educational basis for creating entrepreneurs who are innovative, culturally entrenched, and prepared for the future.

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