

## Incidence and Impact of the Blended Learning Model in Amazonian Indigenous Communities in Peru

*Incidencia e impacto del Modelo Educativo en Alternancia en las Comunidades Indígenas Amazónicas del Perú*

*Incidência e impacto do Modelo Educativo em Alternância nas Comunidades Indígenas Amazônicas do Peru*

*秘鲁亚马逊土著社区实施的可替代教学模式的影响和冲击*

*حدوث وتأثير نموذج التعليم البديل في مجتمعات السكان الأصليين في الأمازون في بيرو*

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### Abstract

The purpose of this research is to describe the incidence and impact of the Educational Model that is applied in the Rural Training Centers in Alternation (CRFA). We try to answer how young people and adolescents of the Shawi-Perú Amazonian indigenous community value the functionality of learning at work. The information is collected through three categories; the first, making known the integration, transformation, and functionality of the knowledge acquired by the students; the second, the repercussion and concretion of the new knowledge in the Shawi families and the third, the contribution of the CRFA to the development and improvement of the quality of life of the Shawi community. The methodology is quantitative; the population is made up of students, former students, pedagogical staff, and collaborators. The applied instrument consisted of 41 indicators, whose Cronbach's Alpha parameter yielded a reliability of 0.957; likewise, the Kolmogorov-Smirnov test was applied, identifying that the sample does not follow a normal distribution; therefore, to analyze the information obtained from the four educational agents, the non-parametric Kruskal-Wallis and Mann-Whitney U tests were applied. The results indicate that learning contributes to improving the quality of life of families and the sustainable development of the Shawi community.

**Keywords:** entrepreneurship, sustainable development, education for work, Shawi ethnicity, gender equality.

### Resumen

La finalidad de esta investigación es describir la incidencia e impacto del Modelo Educativo que se aplica en los Centros Rurales de Formación en Alternancia (CRFA). Tratamos de responder cómo valoran los jóvenes y adolescentes de la comunidad indígena amazónica Shawi-Perú la funcionalidad de los aprendizajes en el trabajo. La información se recoge mediante tres categorías; la primera, da a conocer sobre la integración, transformación y funcionalidad de los conocimientos adquiridos por los estudiantes; la segunda, la repercusión y concreción del nuevo conocimiento en las familias Shawi y la tercera, la contribución de los CRFA al desarrollo y mejora de la calidad de vida de la comunidad Shawi. La metodología es de tipo cuantitativa; la población está conformada por estudiantes, exalumnos, personal pedagógico y colaboradores. El instrumento aplicado estuvo conformado por 41 indicadores, cuyo parámetro de Alpha de Cronbach arrojó una confiabilidad de 0,957; asimismo, se aplicó la prueba de Kolmogorov-Smirnov identificándose que la muestra no sigue una distribución normal; por tanto, para analizar la información obtenida de los cuatro agentes educativos se aplicaron las pruebas no paramétricas Kruskal-Wallis y U de Mann-Whitney. Los resultados indican que los aprendizajes contribuyen en la mejora de calidad de vida de las familias y al desarrollo sostenible de la comunidad Shawi.

**Palabras clave:** emprendimiento, desarrollo sostenible, educación para el trabajo, etnia Shawi, equidad de género.

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## Resumo

A finalidade desta investigação é descrever a incidência e o impacto do Modelo Educativo aplicado nos Centros Rurais de Formação em Alternância (CRFA). Tentámos responder como é que os jovens e adolescentes da comunidade indígena amazónica Shawi-Peru valorizam a funcionalidade das aprendizagens no trabalho. A informação é recolhida através de três categorias: a primeira, dá a conhecer a integração, a transformação e a funcionalidade dos conhecimentos adquiridos pelos estudantes; a segunda, o impacto e a concretização do novo conhecimento nas famílias Shawi; e a terceira, a contribuição dos CRFA para o desenvolvimento e a melhoria da qualidade de vida da comunidade Shawi. A metodologia é de tipo quantitativa; a população é constituída por estudantes, ex-alunos, docentes e colaboradores. O instrumento aplicado foi constituído por 41 indicadores, cujo parâmetro de Alpha de Cronbach revelou uma fiabilidade de 0,957; de igual modo, foi aplicado o teste de Kolmogorov-Smirnov, identificando-se que a amostra não segue uma distribuição normal; assim, para analisar a informação obtida dos quatro agentes educativos, foram aplicados os testes não paramétricos Kruskal-Wallis e U de Mann-Whitney. Os resultados indicam que as aprendizagens contribuem para a melhoria da qualidade de vida das famílias e para o desenvolvimento sustentável da comunidade Shawi.

**Palavras-chave:** Empreendedorismo, desenvolvimento sustentável, educação para o trabalho, etnia Shawi, igualdade de género.

## 摘要

该研究的目的是对在乡村可替代教育中心实施的教學模式的影响和冲击进行描述。在该项目中，我们尝试了解秘鲁亚马逊土著 Shawi 社区的青少年和年轻人对学习功能的评价。我们通过三种渠道收集信息：第一了解学生对获取的知识如何进行整合、转化及应用；第二了解新知识在 Shawi 家庭里的具体化过程及影响；第三了解乡村可替代教育中心对发展提高 Shawi 社区生活质量的贡献。研究采用定量方法，研究目标包括学生、以前的学生、教育人员和协作者。研究使用的工具由 41 项指标构成，克隆巴赫系数得到工具的信度为 0.957，通过柯尔莫哥洛夫-斯米尔诺夫检验证实样本并不遵循正常分布。因此，研究使用克瓦氏分析和曼-惠特尼 U 检验对四所教育机构的数据信息进行分析。研究结果显示学习对改善 Shawi 社区家庭生活质量及推东该社区的可持续发展起到了重要的作用。

**关键词:** 创业、可持续发展、职业教育、Shawi 族、性别平权

## ملخص

تحاول الإجابة عن الكيفية التي (CRFA) الغرض من هذا البحث هو وصف حدوث وتأثير النموذج التعليمي المطبق في مراكز التدريب على التناوب الريفي يقدر بها الشباب والمراهقون من مجتمع شاولي البيرو الأصلي الأمازوني وظيفة التعلم في العمل يتم جمع المعلومات من خلال ثلاث فئات: الأول يكشف عن لتطوير CRFA تكامل وتحويل ووظيفة المعرفة المكتسبة من قبل الطلاب؛ الثاني: تداعيات المعرفة الجديدة وتكوينها في أسر الشاولي، والثالث مساهمة وتحسين نوعية حياة مجتمع شاولي. المنهجية الكمية. يتكون السكان من الطلاب والخريجين وأعضاء هيئة التدريس والمتعاونين. تتكون الأداة المطبقة من 41 لتحديد أن العينة لا تتبع، Kolmogorov-Smirnov عن موثوقية قدرها 0.957؛ وبالمثل، تم تطبيق اختبار Cronbach's Alpha مؤشراً، أسفرت معلمة غير المعلمية على Mann-Whitney U و Kruskal-Wallis التوزيع الطبيعي؛ لذلك، لتحليل المعلومات التي تم الحصول عليها تم تطبيق اختبارات الوكلاء التربويين الأربعة. تشير النتائج إلى أن التعلم يساهم في تحسين نوعية حياة الأسر والتنمية المستدامة لمجتمع شاولي.

**الكلمات الدالة:** ريادة الأعمال، التنمية المستدامة، التعليم من أجل العمل، عرقية الشاولي، المساواة بين الجنسين

## Introduction

The present research forms part of the research project, 'Impact of Family Education Centres for Blended Learning (CEFFA): Perceptions of Actors from Different Countries'. The aim of this project is to describe the incidence and impact of a blended educational model applied in rural blended learning centres (CRFA) in the Shawi Amazonian indigenous community of the

department of Loreto in the Republic of Peru. Specifically, the project seeks to identify the perceptions of educational agents from CRFA regarding the functionality of student learning. Further, it seeks to examine whether the knowledge acquired by students at CRFA have implications for Shawi families and whether the curricular activities delivered at CRFA contribute to better quality of life in the Shawi community. To this end, first, the context in

which the research was conducted will be described.

The indigenous population in Peru rises to slightly more than five million people, representing 25% of the overall population in Peru [National Agrarian Confederation (CNA), 2019]. Likewise, 66% of indigenous communities are located in rural regions of Peru (Camero & Gonzales, 2018). In accordance with the III Census of Native Communities conducted in 2017 in Peru, 2,703 communities exist, belonging to 44 indigenous or native peoples. The department in which the largest number of these communities is concentrated is Loreto with 1,170 communities, representing 43.2% of the overall number, distributed between 28 different peoples [National Statistics and Informatics Institute (INEI), 2018]. Further, the III Census of Native Communities (INEI, 2018) reveals that the indigenous peoples that make up the largest number of native communities are the Ashaninka people with 520 (19.24%) communities, followed by the Awajun people with 419 (15.5%) communities. It serves to highlight that the Shawi people was found in fifth place with 185 native communities, representing 6.84% of native communities in Peru.

In the educational setting, of the 185 Shawi communities, 178 have schools catering for a total of 8523 students, distributed between initial, primary and secondary levels. An average of 879 students undertake secondary level education. With regards to higher education, the majority of young people do not have access to university or to higher education institutes, instead, dedicating themselves to hunting, fishing, agriculture and farming (INEI, 2018).

### ***The Shawi Indigenous People***

By means of a background, prior to the Spanish conquest, the Shawi people inhabited territories close to the basins of the rivers Sillay and Paranapura. When the Spanish arrived to these territories, they established encomiendas that consisted in designating each Spaniard a certain number of indigenous

natives in order to convert them into Christians. Later, between 1638- 1768, Jesuit missionaries emerged who created missions such as Our Lady Loreto of Paranapur, the Presentation of the Chayabitas and Conception of Cahuapanas. The concentration of the indigenous population facilitated the acquisition of diseases such as measles and smallpox from the Spanish people who arrived to the region. This led to the death of a large number of indigenous people, given that their bodies did not have immunological protection against these new viruses (Huertas & Chanchari, 2011). With regards to the economy, the Shawi lived on their master's estates and participated in the production of rubber-related products or they worked to collect rubber, animal skins and sarsaparilla (Ministerio de Cultura del Perú, 2017b).

In the present day, Shawi territory is located south of the Marañón river in the Loreto region and in the Alto Amazonas and Datem del Marañón provinces. These areas are also denominated Chayahuita, Paranapura, Cahuapanas, Supayacu, Sillay, Chawi and Tshaahui (Health Ministry of Peru, 2008). With regards to its location, the Balsapuerto district, belonging to Alto Amazonas province, is home to the largest number of Shawi people throughout the region. The main language spoken throughout most of Shawi territory is "Canponan" (González, 2013), whilst the Peruvian government, through the Ministry of Culture, official states Cahuapana to be the linguistic family of the indigenous Shawi people and recognises the official language of this community to be "Shawi" (Ministry of Culture of Peru, 2017a)

An important aspect to highlight is that pertaining to the link established between the Shawi people and the natural environment. "All components of nature are considered to form part of daily life and are the engine that drives the survival of their culture" (Alvira & Homan, 2014, p. 187). Likewise, these authors state that chakras are an essential component of their existence, enabling them to divide work between the family, whilst, also, using them as learning centres, places to share food

and spaces to establish and strengthen bonds pertaining to the family social context.

With regards to economy, Shawi families mainly depend on slash-and-burn agriculture, cultivate cassava, rice, cotton, tobacco, banana, papaya and beans. Likewise, some of their activities include hunting and fishing and, to a lesser extent, the husbandry of birds and small animals (Lozano et al., n.d.).

With regards to the typical foods consumed by the Shawi, Zabaleta et al. (2018) state that, according to informants, these people consume bush meat, fish or suri patarashca and cooked plantain, whilst main drinks are masato, which is made out of yuca, rice, corn, oats or pineapple. Further, they consume forest fruits such as cocona, banana, papaya and guava. The main animals included in their diet are fish, pig, majaz, anuje, deer and poultry. Another important aspect is health and hygiene. This has been described by Torres-Slimming et al. (2019), stating that the majority of the Shawi people defecate outside and in rivers. Likewise, they do not have the habit of washing their hands due to the absence of latrine construction and the use of soap not being widespread.

### ***Blended Educational Model***

Blended educational models arose out of initiatives led by agricultural families in France (1937) under the denomination of *Maison Familiale Rurale* (MFR). This proposal was born out of the need to link the education of the children of agricultural workers with the rural setting. In the present day, the majority of educational institutions in countries who have adopted this model are called family centres for blended learning (CEFFA)(Puig-Calvo, 2006).

The intended outcome of blended learning can be classified into two streams. The first pertains to the basic training of individuals, education and socio-occupational insertion. The second refers to development of the community in which it is delivered (Gimonet, 2009). In this sense, research conducted by Monge (2016) conclude that the blended

educational model equips students to obtain financial resources that will give them the chance to continue into higher education. Likewise, this author argues that by providing training in human, academic and professional settings, social, human, entrepreneurial, occupational and technical skills are developed.

The blended educational model follows a methodology in which students acquire learning in two settings. The first refers to social life and the economic, environmental and cultural setting, work and production. The second setting corresponds to the school CEFFA setting and, specifically, the execution of the curricular program through the delivery of teaching-learning activities (Gimonet, 2009).

In another sense, research conducted by Divinsky (2019) has provided in-depth knowledge about pedagogical and didactic processes, arguing that blended learning develops autonomy and equips students for work. It is an active method, in which learning is reflective and constructivist in nature. Students, graduates, teaching staff, families, public authorities and the community are all involved as participatory agents.

With regards to the outcomes achieved through the application of the blended learning model, research carried out by García (2002) highlighted the influence of MFR on local development in Europe and developing countries (PVD). The study variables examined were employment, local development, family situation and belonging in the process, with criteria being belonging, impact and sustainability. Next, some of the indicators that enabled these variables to be measured are discussed. These indicators formed the basis of the questionnaire administered in this research and include suitability of the training received, improvement projects, job placements, job satisfaction, participation at other institutions, improvements to the quality of the diet, reorganisation and number of new work projects, number of graduates involved in

developing projects, response to local needs, diversification of activities, accompaniment during the project, employment quality and stability,...

In practical terms regarding the curriculum, blended learning counts on didactic and pedagogical resources that are used in the teaching-learning process. Puig-Calvo (2006) denominates these pedagogical activities and instruments, classifying them as activities and instruments for the exploration of livelihood, didactic activities and instruments, activities and instruments for relatedness, and evaluation activities and instruments. In the same way, Gimonet (2009) discussing some of the most noteworthy pedagogical activities and tools, including, notebook of lived experiences, establishment of a common activity that serves as the pillar of the project, study visit and outside intervention, pedagogical classes and worksheets, exercises, assimilation and generation of knowledge, and evaluations of the extent of progress. Likewise, Divinsky (2019) highlights other important pedagogical tools, including, training plans as a learning tool, search plans as a research methodology, notebook of lived experiences (in which students record their observations of performed tasks and the resultant production of new knowledge) and reflections to enable the identification of progress and challenges. Further, this author refers to visits as a didactic resource that permits understanding of the environment and the role of the student in the family nucleus, outlining tutorial as instruments that enable a more personalised training of students. Finally, internships emerge as a tool that enables students to get to know certain jobs and professions in practice, whilst, evaluation is a means to increasing knowledge and supporting decision making in order to meet the goals of the educational project.

Tutoring is one of the blended learning tools that has already been analysed and addressed in a comprehensive study. This is defined as personalised accompaniment throughout the training process (González-García, 2020). Outcomes reported in the thesis presented by

this author indicate that tutoring influences the intellectual and professional attitudes of students, facilitating and promoting guidance and professional adaptation in students.

It serves to highlight that the aims and objectives of this educational model cannot be achieved without good management of didactic and pedagogical resources. For this reason, it is important that implied teaching professionals have in-depth knowledge of the educational psychology of students passing through adolescence in order to be able to understand and guide them, as much with regards to their personal life as with regards to their social and professional insertion. Resource management is addressed by Gimonet (2009) when considering issues related with the planning and management of pedagogical work at CEFFA, oversight of student training plans, management of the relationships formed between CEFFA and families and between students and teaching staff, and oversight of the different ambits of student life.

The blended learning model was implemented in the Peruvian context by the Pro-Rural Civil Association in 2002 via three educational institutions (two in the Cusco region and one in the Piura region) denominated rural blended learning centres (CRFA). In 2011, 57 CRFA had been established in 14 regions of Peru [Peruvian Ministry of Education (MINEDU), 2021]. By 2017, 70 CRFA existed throughout 15 regions of Peru (MINEDU, 2017). In 2021, Ministerial Resolution N° 204-2021 emitted by MINEDU established the new Secondary Education Service Model for Blended Learning. The following criteria must be met for the selection of students for this model by Public Secondary Education Institutions for Basic Standard Education: a) students must come from a rural zone with a disperse population, b) students must live at least 4 hours from a study centre, and c) the community or family must be engaged in a productive or ancestral activity (MINEDU, 2021). In the present day, 91 CRFA are

registered in 15 regions of Peru (Peruvian Ministry of Education, 2019).

CRFA training policies must align to the Training Plan which, in Peru, lasts for 5 years, the same as the length of time in which secondary education provision lasts within the basic education program. In this sense, students develop skills through the Training Plan because the way in which modules are viewed, understood and related is linked with real life. This process enables students to achieve planned learning (Puig-Calvo, 2006).

With regards to didactic resources for blended learning in CRFA, a few stand out, including, study guides, talks directed by industry-related professionals, agriculture and farming, didactic units (technical material and general material), guided visits to students undergoing blended learning in companies and institutions, projects (productive, professional innovation, life projects, tutoring internships and/or professional specialization, notebook entries regarding the accompaniment relationship and blended learning follow-up (Research and Formation Team & ONDJYLA, n.d.).

## Method

### Design

The important contribution of the present research comes from the knowledge it will generate about perceptions of educational agents (students, pedagogy staff and parents of

people from the Shawi community) regarding the role of CRFA in improving the quality of life of inhabitants of Shawi communities.

The present study is transversal, descriptive and non-experimental in nature with a quantitative methodology. Questionnaires were administered which were later processed using statistical software to present, interpret and analyse data. With regards to quantitative research, Hernández et al. (2014) states that this approach strives to be objective, whilst describing, explaining, examining and predicting phenomena. Further, the extent of the problem under examination will be measured and estimated.

### Population and Sample

Four CRFA exist within the Shawi population. These are located in Antioquía, Nueva Esperanza, Pucalpillo and Puerto Porvenir and serve 36 communities. Four educational agents operate within the population. These are classified as pedagogical staff, students, former students and collaborators (families, specialists attached to the Local Educational Management Unit (Ugel), municipal authorities and entrepreneurs from the region). The sample was voluntarily recruited through intentional sampling, given that all individuals from the population had the same opportunity to participate (Corral et al., 2015). Table 1 presents details of the population and research sample.

Table 1. Population and study sample: educational agents belonging to CRFAs

CRFA	Collaborators (Families 2021)		Students starting their 5th school year (2021)		Former students (graduating in 2020)		Pedagogical staff (2021)	
	P*	S*	P*	S*	P*	S*	P*	S*
Antioquía	32	8	7	7	10	2	11	11
Nueva Esperanza	35	10	13	8	15	5	12	12
Pucalpillo	41	2	8	7	22	3	11	11
Puerto Porvenir	41	8	7	3	14	6	11	11
Total	149	28	35	25	61	16	45	45

Note. P\*= population, S\*= sample

### **Variables**

Research variables regarding sustainable development were classified according to three dimensions. The first, provide information about the integration and transformation of knowledge acquired by students. The second, provide details about the implications and establishment of new knowledge in Shawi families. The third and final dimension gathers data on the contribution of CRFA towards supporting and improving quality of life in the Shawi community. Outcomes pertaining to these dimensions will be discussed in relation to dimensions of sustainable development. Appendix A presents the variables, dimensions and indicators used in the research.

### **Data Collection Instruments and Procedures**

In 2019, the International Research and Reflection Group on Blended Learning (GIIRA) was set up in the city of Guatemala. The group counts on the participation of researchers from 15 universities from different countries in which a blended educational model is followed. The GIIRA elaborated and validated questionnaires to gather information on the impact of the training delivered at rural blended learning centres (CRFA). Questionnaires were designed to collect the perceptions reported by educational agents in various countries.

Prior to the administration of the questionnaires, the Ethical Committee of the Faculty of Education and Social Sciences at Sherbrooke University, Canada, approved the project and oversaw the following aspects to ensure they were complied with: voluntary participation, confidential data handling, data storage in digital devices, data access for institutions and individuals related with training in blended learning and the destruction of data held more than seven years after the publication of findings

In consideration of the aforementioned aspects, four institutions were visited in order

to gather information about the impact of the blended learning model followed by CRFA within indigenous Amazonian Shawi families. Students, teaching staff and collaborators were informed about the research that was about to be conducted. An awareness campaign was carried out to encourage the completion of questionnaires. Following this, a collaborating teacher entered results into the platform used to store research data.

To ensure that questionnaires were properly filled out by collaborators (parents from participating families), it was necessary to coordinate with a translator who was competent in both the Spanish and Shawi languages.

In order to meet the proposed aim, 41 indicators were selected (Appendix A) from the questionnaires and analysed to produce a Cronbach alpha using the program SPSS-25. A value of 0.957 was obtained, indicating that instruments were acceptably reliable (Campo-Arias & Oviedo, 2008). Likewise, the Kolmogorov-Smirnov test was performed, revealing that data collected from the sample did not follow a normal distribution (Isaza et al., 2015). Thus, non-parametric tests were used to compare responses provided by different educational agents.

With regards to the scales used for the instruments, dimensions 01 and 03 were measured along a 5-point Likert scale [1= I don't know or not applicable (DKNA), 2= Totally disagree (TD), 3= Slightly disagree (SD), 4= Slightly agree (SA), 5= Totally agree (TA)]. Items from dimension 02 were measured on a scale ranging from 1 to 10, with 1 being the lowest level and 10 being the highest level. In order to process and interpret information gathered using this scale, it was converted into a 5-point Likert scale (1, 2 =1; 3, 4= 2; 5, 6= 3; 7, 8= 4 and 9, 10= 5). After applying these changes, a scale was elaborated that is described in Table 2.

Table 2. Scale for categorising responses

Interval	D1	D2/D3
(3,7; 5]	Functional	Contributes
(2,4; 3,7]	Barely functional	Barely contributes
[1; 2,4]	Not functional	Does not contribute

Note. D1= dimension 01, D2= dimension 02, D3= dimension 03

### Data analysis

Data was gathered from four educational agents who participated in running activities out of the CRFA. In order to be able to understand information pertaining to each dimension, means produced for the indicators were examined. Next, the most highly rated items were identified, with these data being used to outline the most relevant findings from responses given by agents participating in the present research.

Following this, responses provided by different educational agents were compared in order to identify the distribution of findings. For this, non-parametric tests were used, including the Kruskal-Wallis test to compare more than two agents and the Mann-Whitney U test to compare the responses of two agents. For this reason, null hypotheses were formed, stating that no differences would exist between the response distribution pertaining to different educational agents regarding whether or not learning was functional, knowledge implications and whether the educational model contributed towards improving quality of life in the Shawi community. To this end, should the hypothesis be rejected, an alternative hypothesis would have to be accepted that differences did, indeed, exist between the responses given by different educational agents.

### Results

In order to obtain outcomes for dimension 01, data was gathered from three educational agents who participated in the running of activities from participating CRFAs. These were pedagogy staff, students and former students. Data was provided in response to a

functionality scale. In the case of dimension 2, information was gathered from students, collaborators and former students. In the case of dimension 3, data was gathered from two educational agents, namely, collaborators and former students. Dimensions 2 and 3 were evaluated using a scale describing the perceived level of contribution.

In order to analyse and interpret outcomes, responses given by different agents were compared with the aim of triangulating information and verifying whether outcomes obtained from each sample converged. In addition, in order to obtain general information about each dimension, averages produced from the responses to each item were examined.

#### ***Dimension 01: Integration, transformation and functionality of knowledge acquired by students***

As can be observed from Table 3, 91.9% of the three educational agents involved in the present research reported that learnings were well integrated, transformational and functional for their personal, social and professional life. The three most highly rated indicators associated with the methodology followed at CRFA were P1 (94.2%), P3 (93.1%) and P9 (94.2%), see Table 4. Thus, in this sense, the three educational agents manifested slight or total agreement with items stating that the training delivered was related with life experiences, knowledge was linked with the pertinent profession and training was delivered in the same space in which students performed their job, studies dissected with work and teachers related the knowledge they imparted with the activities performed by students in the socio-professional space.

Table 3. Results for dimension 01m

<b>Educational agent</b>	<b>Level</b>	<b>Frequency</b>	<b>Percentage</b>
Pedagogy staff	Functional	43	95.6
	Barely functional	1	2.2
	Not functional	1	2.2
	<b>Total</b>	45	100.0
Students	Functional	22	88.0
	Barely functional	2	8.0
	Not functional	1	4.0
	<b>Total</b>	25	100.0
Former students	Functional	14	87.5
	Barely functional	2	12.5
	<b>Total</b>	16	100.0
All agents overall	Functional	79	91.9
	Barely functional	5	5.8
	Not functional	2	2.3
	<b>Total</b>	86	100.0

*Note.* Outcomes obtained using the program SPSS

Table 4. Responses provided by the three educational agents to questions 1,3 and 9

<b>Item</b>	<b>DKNA</b>	<b>TD</b>	<b>SD</b>	<b>SA</b>	<b>TA</b>
P1	1.2	3.5	1.2	20.9	73.3
P3	0.0	1.2	5.8	23.3	69.8
P9	1.2	1.2	3.5	18.6	75.6

*Note.* Numerical values are reported as percentages.

Analysis using the Kruskal-Wallis test revealed that significant differences existed in the distribution of responses pertaining to each of the three educational agents regarding the functionality of learning, with the p-value being below 0.05, see Tables 5. Next, pairwise comparisons were conducted between each pair of individuals under study. Test outcomes

indicated that differences existed between responses given by students and pedagogy staff, see Table 6. Finally, the items making up this dimension were examined, revealing that these differences pertained to items 04 and 10. Responses provided by the three agents in response to these two items are presented in Table 7.

Table 5. Test outcomes<sup>a,b</sup>

	<b>Values</b>
Kruskal-Wallis H	7.552
df.	2
Asymptotic sig.	.023

a. Kruskal Wallis test

b. Grouping variable: Research subject

Table 6. Average range pertaining to research subject sub-samples

<b>Sample 1-Sample 2</b>	<b>Contrast statistic</b>	<b>Error</b>	<b>Contrast statistic dev.</b>	<b>Sig.</b>	<b>Adjust. sig.</b>
Students-Pedagogy staff	15.958	6.133	2.602	.009	.028
Students-Former students	-16.286	7.872	-2.069	.039	.116
Pedagogy staff-Former students	-3.28	7.157	-.046	.963	1.000

*Note.* Level of significance set at .05. Adjust. sig. Bonferroni correction.

Table 7. Responses provided by the three educational agents to questions 4 and 10

Item	Subject group	DKNA	TD	SD	SA	TA
P4	S	0.00	4.00	12.00	36.00	48.00
	FS	0.00	0.00	12.50	18.75	68.75
	PS	0.00	4.44	0.00	17.78	77.78
P10	S	8.00	4.00	8.00	40.00	40.00
	FS	0.00	0.00	6.25	31.25	62.50
	PS	0.00	2.22	0.00	24.44	73.33

Note. S= students, FS= former students, PS= pedagogy staff.  
Values are reported as percentages.

Table 7 presents outcomes for item 4, indicating that 84% of students and 87.5% of former students slightly or totally agree that base material such as Spanish and Mathematics linked with the student's profession favours their training and equips them to succeed. Using the same rating scale, pedagogy staff reported even greater expectations, with 95.56% slightly or totally agreeing, that these subjects provided appropriate training and improved student performance in the professional setting. In the same sense, responses to item 10 revealed that 80% of students slightly or totally agreed with the statement that applying teaching delivered at school directly in the field promotes successful training and upskilling. When presented with the same scenario, pedagogy staff and former students reported even greater expectations, with 97.77 % and 93.75%, respectively, reporting their agreement.

### ***Dimension 02: Implications and consolidation of new knowledge within Shawi families***

As shown in Table 8, an average of 75.4% of students, collaborators and former students reported that the knowledge acquired by students at CRFA were consolidated and contributed towards better living conditions in Shawi families. In this regard, 75% of 85.7% of former students and collaborators, respectively, were aware of the contributions made by CRFA to the community. In contrast, 36% of students reported that learnings acquired at these centres contributed little or not at all. This may be due to the fact that participating students were still undergoing early stages of their training and had not yet personally come into contact with the contributions of the blended methodology. Further, in 2020 and 2021, their training was affected due to the confinement imposed by the Covid 19 pandemic.

Table 8. Results for dimension 02

Educational agent	Level	Frequency	Percentage
Students	Contributes	18	64.0
	Barely contributes	6	32.0
	Does not contribute	1	4.0
	<b>Total</b>	25	100.0
Collaborators	Contributes	24	85.7
	Barely contributes	2	7.1
	Does not contribute	2	7.1
	<b>Total</b>	28	100.0
Former students	Contribute	12	75.0
	Barely contributes	4	25.0
	<b>Total</b>	16	100.0
All educational agents overall	Contributes	52	75.4
	Barely contributes	14	20.3
	Does not contribute	3	4.3
	<b>Total</b>	69	100.0

Note. Outcomes obtained using the program SPSS

As can be seen in Table 9, four items, namely, P17, P15, P14 and P12 were rated more highly by the three educational agents, with 91.31%, 85.50%, 82.61% and 82.61%, respectively, reporting that they slightly or totally agreed that the knowledge provided had enabled hygiene and sanitary conditions to improve at an individual, family and community level. CRFA have contributed to

greater productivity and, even more importantly, have supported gender equality, as agents highly valued access to a formal education and the participation of women in the community. In addition, agents valued the conservation and creation of employment, greater commercialisation and incorporation of technology within Shawi communities.

Tabla 9. Responses provided by educational agents to questions 12, 14, 15 and 17

Item	DKNA	TD	SD	SA	TA
P12	2.90	5.80	8.70	13.04	69.57
P14	1.45	2.90	13.04	15.94	66.67
P15	1.45	2.90	10.14	13.04	72.46
P17	0.00	2.90	5.80	21.74	69.57

*Note.* Numerical values are presented as percentages.

Analysis using the Kruskal-Wallis test revealed that differences existed between the response distribution pertaining to the three different educational agents, see Table 10. Test outcomes showed that differences existed between responses given by students and those given by collaborators, see Table 11. Finally, differences emerged between students and collaborators for almost all items, with the exception being for items 11, 16 and 22. In this

case, agents agreed that CRFA contributed towards improving living conditions in the family, emotional, social, financial and occupational spheres, increasing the commercialisation of goods, and increasing the conservation and creation of employment to the benefit of students belonging to the Shawi community. Table 12 presents the responses given by each of the three types of educational agents.

Table 10. Test statistica,b

	Values
Kruskal-Wallis H	11.162
df.	2
Asymptotic sig.	.004

a. Kruskal Wallis test

b. Variable: Research subject

Table 11. Average range pertaining to educational agent sub-samples

Sample 1-Sample 2	Contrast statistic	Error	Contrast statistic dev.	Sig.	Adjust sig.
Students-Former students	-10.529	6.124	-1.719	.086	.257
Students-Collaborators	-17.542	5.263	-3.333	.001	.003
*Former students-Collaborators	-7.013	5.994	-1.170	.242	.726

*Note.* Level of significance set at .05. Adjust. sig. Bonferroni correction.

Table 12. Responses of educational agents to questions 11, 16 and 22

Item	Subjects	DKNA	TD	SD	SA	TA
P11	S	4.00	8.00	20.00	20.00	48.00
	FS	0.00	6.30	12.50	18.80	28.50
	COL	3.60	0.00	7.10	10.70	78.60
P16	S	0.00	16.00	20.00	12.00	52.00
	FS	0.00	0.00	12.50	18.80	68.80
	COL	0.00	3.60	7.10	10.70	78.60
P22	S	0.00	16.00	8.00	32.00	44.00
	FS	6.30	0.00	6.30	43.00	43.00
	COL	10.70	3.60	7.10	10.70	67.90

Note. S= students, FS= former students, COL= collaborators.  
Numerical values are reported as percentages.

**Dimension 03: Contribution of CRFA to the development and improvement of quality of life in the Shawi community**

As shown in Table 13, 90.9% of collaborators and former students reported that CRFA contributed towards local development and the improvement of quality of life in Shawi communities. Items P26, P35 and P38 were

rated most highly, with 95.35%, 97.68% and 97.68%, respectively, of educational agents stating that CRFA contributed towards promoting local and land development, sustaining local traditions and culture, and supporting the achievement of sustainable development aims. These outcomes can be observed in Table 14.

Table 13. Results for dimension 03

Educational agent	Level	Frequency	Percentage
Collaborators	Contributes	27	96.4
	Barely contributes	1	3.6
	Does not contribute		
	<b>Total</b>	28	100.0
Former students	Contributes	13	81.3
	Barely contributes	3	18.7
	Does not contribute		
	<b>Total</b>	16	100.0
Both educational agents overall	Contributes	40	90.9
	Barely contributes	3	6.8
	Does not contribute	1	2.3
	<b>Total</b>	44	100.0

Note. Outcomes obtained using the program SPSS

Table 14. Responses provided by the three educational agents to questions 1,3 and 9

Item	DKNA	TD	SD	LA	TA
P26	0.00	2.33	2.33	16.28	79.07
P35	0.00	0.00	2.33	16.28	81.40
P38	2.33	0.00	0.00	16.28	81.40

Note. Numerical values are presented as percentages.

Analysis using the Mann-Whitney U test revealed that no differences in response distribution existed between the two

educational agents (educational collaborators and former students), with a p-value greater than 0.05 being obtained, see Table 15.

Table 15. Test statistics<sup>a</sup>

	Values
Mann-Whitney U	169.000
Wilcoxon W	305.000
Z	-1.557
Asymptotic sig. (bilateral)	.119

a. Variable: Research subject.

## Discussion and conclusions

With regards to the blended learning methodology, the three educational agents (pedagogy staff, students and former students) positively valued the integration, transformation and functionality of knowledge acquired from CRFA and highlighted that knowledge was well joined up with work and life experiences, with an average of 91.9% reporting this to be the case. In this sense, García (2002) states that the blended learning approach responds to the training needs of students in a rural setting. Indeed, studies conducted in countries such as Great Britain, France and the Philippines provide evidence that blended learning improves employability in those settings and contributes towards obtaining gainful employment. This approach is rated highly in terms of the adequacy of training provision (96%) and job insertion (72.6%). Further, the methodology has produced a 95% satisfaction rating suggesting that the blended learning educational model is considered to be highly pertinent.

Present findings also reveal that an average of 75.4% of students, collaborators and former students believe that knowledge acquired by students is consolidated and has implications in Shawi communities, contributing towards better living conditions. Notably, the lowest level of agreement was seen in students, with just 64% agreeing with this aspect. It is possible that these responses are shaped by confinement due to Covid 19. It was highlighted that knowledge acquired from CRFA has enabled improved living conditions at an individual, family and community level, increasing productivity and promoting gender equality. In a similar sense, outcomes reported by Monge (2016) highlight that 5th-year secondary school students educated at CRFA

have high job expectations, with 100% expecting to secure employment and 93% believing that the business initiatives they embark on would give them an income and the professional training they received would bring them future benefits. These findings indicate that knowledge acquired by students at CRFA have an impact on the Shawi community. Thus, outcomes provide information about attention to the needs of the community, family wellbeing, student practice at companies, entrepreneurial and productive project delivery, skill acquisition and commercialization, and the introduction and transformation of new products and services. All of the aforementioned actions have led to a new and improved way of living in this indigenous Peruvian community.

With regards to the third dimension, it can be concluded that CRFA have contributed towards the development of quality of life in the Shawi community, which must be sustained over time. Overall, 90.9% of responses provided by collaborators and former students demonstrated agreement with the statement that CRFA have contributed towards the promotion of local and land development, supporting local traditions and culture, and the achievement of sustainable development goals in the Shawi community. Findings indicate that CRFA have helped improve the output of local business, increase social responsibility within community graduates and improve family nutrition. Findings reported by García (2002) from France and Great Britain highlighted the importance of MFR sticking to a middling approach, given that this favours community development and territorial balance via socio-occupational insertion. Indeed, 67% of MFR graduates were found to have employment,

with 51% of jobs being rural (though not in agriculture).

In support of sustainability, García (2002) highlights “tutoring” as an important pedagogical tool for blended learning, with this referring to accompaniment of tutors to deliver a project. In accordance with González-García (2020), tutoring refers to accompaniment of students throughout the entire training process. These authors state that tutoring impacts the individual attitudes and professions of students. Present research findings reveal that students are in favour of receiving visits from their teachers, as a means of guidance to link learning acquired at CRFA with practice and the socio-occupational setting. Such visits are excellent opportunities to exercise tutoring and student accompaniment.

Thus, it can be concluded that CRFA contribute towards sustainable development in indigenous Shawi communities over time. In addition, application of a blended learning methodology had an impact within the community, given that it favoured development through the transformation of raw materials by enabling inhabitants to acquire resources and improve their family’s finances. When beginning their studies, students attending CRFA agree upon a training plan that is comprised of productive, innovation, professional and life projects. This enables them to develop humanistic, social, entrepreneurial and occupational skills that have implications for their future life and the development of their community.

Likewise, graduates who hold knowledge about the way in which to transform the natural resources of their region, and startup and direct a business are able to lay down roots in the region, meaning that they are not forced to migrate to the capital cities of the departments of Peru as a means to improving their living conditions.

Limitations of the present study include its geographical distance from participating communities, and the language and dialect inherent to Shawi communities. This made it difficult to collect information and involves a degree of response bias.

Finally, the present conducted study may be useful to the Peruvian Ministry of Education when it comes to introducing educational policy that assists teachers practicing in rural regions and, especially, in Amazonian communities in Peru. Present findings are particularly important given that the blended educational model demands ongoing commitment and must be targeted towards students being trained at CRFA.

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## APPENDIX A

Variable: Impact of the blended learning model in the Shawi community in Peru.

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<b>Dimension 01: Integration, transformation and functionality of knowledge acquired by students.</b>
<b>Items/indicators</b>
P1: [Training delivered at CRFA leans on the life experiences of students.]
P2: [Blended oversight (school-socio-occupational space) at CRFA favours the successful training/upskilling of students.]
P3: [As work is related with studies, it promotes the successful training/upskilling of students.]
P4: [As the base subjects (Spanish, Mathematics, etc.) are taught in a joined-up way with the profession, the successful training/upskilling of students is favoured.]
P5: [Preliminary preparation at the CRFA, prior to the placement or internship, favours the successful training/upskilling of students.]
P6: [Placements or internships in the occupational setting favours the successful training/upskilling of students.]
P7: [The paperwork (documents-forms) that students must fill out during their placement or internship in the socio-professional space promote their successful training/upskilling.]
P8: [The sharing of experiences upon return from the placement or internship in the socio-professional space favours the successful training/upskilling of students.]
P9: [Teachers or monitors take into consideration what students have done during their placement or internship in the socio-professional space when delivering teaching.]
P10: [The act of directly applying that taught to students at school in the field promotes their successful training/upskilling.]
<b>Dimension 02: Implication and consolidation of new knowledge within Shawi communities.</b>
<b>Item/Indicator</b>
P11: [general living conditions (emotional, family, occupational, financial, social, ...) of families]
P12: [the participation of women]
P13: [the incorporation of technology]
P14: [access of women to a formal education]
P15: [increase in productivity]
P16: [commercialisation]
P17: [hygiene and sanitary conditions at an individual, family and community level]
P18: [increase in the aggregated value of products]
P19: [housing and community infrastructure (water, electricity, ...)]
P20: [incorporation of new job or profession (non-agricultural employment)]
P21: [introduction of new services (health, tourism, commerce, ...)]
P22: [conservation and creation of employment]
<b>Dimension 03: Contribution of CRFA to development and improved quality of life in the Shawi community</b>
<b>Item/Indicator</b>
P23: [CRFA contribute to local roots.]
P24: [CRFA contribute to the creation or improvement of enterprise or local business.]
P25: [CRFA contribute to the transfer of technology into communities.]
P26: [CRFA promote local and land development.]
P27: [CRFA favour social responsibility.]
P28: [CRFA favour caring for the environment.]
P29: [CRFA contribute to improving family nutrition.]
P30: [CRFA favour dietary security and safety.]
P31: [CRFA favour the diversification of rural employment.]
P32: [CRFA create links with business or the socio-professional setting and local institutions.]
P33: [CRFA promote open development initiatives in the community.]
P34: [CRFA promote political commitment (in the community, region or country)]
P35: [CRFA promote local traditions and culture.]
P36: [CRFA contribute to a suitable leisure culture as a means to attracting young people.]
P37: [CRFA contribute to open upskilling in communities.]
P38 [CRFA contribute to the achievement of sustainable development goals (SDG)]
P39: To what extent do CRFA contribute, in the field, to pedagogical, technical and technological innovation? [Pedagogical innovation]
P40: To what extent do CRFA contribute, in the field, to pedagogical, technical and technological innovations? [Technical innovations (procedure)]
P41: To what extent do CRFA contribute, in the field, to pedagogical, technical and technological innovations? [Technological innovations (series of techniques and theoretical and scientific knowledge)]

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Note. Elaborated by the present authors.

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