FORHUM
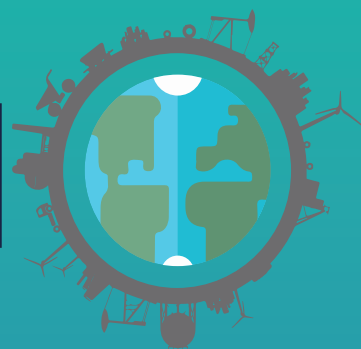## International Journal of Social Sciences and Humanities

FORHUM International Journal
of Social Sciences and Humanities

CIFE
Centro Universitario

Forhum International Journal of Social Sciences and Humanities es una revista internacional, de acceso abierto, de publicación semestral y de revisión por pares. Está orientada a economistas, sociólogos, politólogos, abogados, geógrafos, urbanistas, comunicólogos, filósofos, lingüistas, psicólogos, científicos sociales y humanistas en general. *Forhum International Journal of Social Sciences and Humanities* tiene por objetivo la publicación de textos inéditos precedentes de investigaciones teóricas y aplicadas relacionadas con las ciencias sociales y humanidades. *Forhum International Journal of Social Sciences and Humanities* publica artículos en espa018, inglés, fráncés y portugués.

Para postular artículos, conocer la política editorial, suscripciones y demás información, visite el sitio web:
https://www.cife.edu.mx/forhum/index.php/forhum/index

Vol 4. , No. 7, JULIO-DICIEMBRE 2022

Sistemas de Indexación, Catálogos y Repositorios

Latindex (Sistema Regional de Información en Línea para Revistas Científicas de América Latina y el Caribe, España y Portugal

REDIB (Red Iberoamericana de Innovación y Conocimiento Científico

LatinREV (Red latinoamericana de revistas académicas en ciencias sociales y humanidades)

ERIHPLUS (European Reference Index for the Humanities and Social Sciences)

DRJI (Directory of Research Journals Indexing)

Latam Studies

Crossref

Google Academics

Rubric of pedagogical practices to guide education towards sustainable social development and socioecological systems

Rúbrica de prácticas pedagógicas para orientar la educación hacia el desarrollo social sostenible y los sistemas socioecológicos

Abstract: The assessment of the pedagogical practices of the teachers is carried out through instruments oriented on Likert-type scales or checklists that assess general and cognitive aspects of the teaching work, omitting the relevant actions that must be implemented with the students so that they are formed as citizens according to the objectives of sustainable social development. Rubrics are very important and required for teachers to self-assess their pedagogical practices and implement improvements accordingly. That is why the purpose of this study was to design a socioformative rubric to self-assess basic pedagogical practices to achieve sustainable social development and determine content validity, construct and reliability. In this regard, an instrumental study was carried out based on the following steps: 1) content validity by 27 expert judges in the area using the same form on Google; 2) analysis of the content validity, relevance and general satisfaction of the instrument, by means of a pilot group composed of 69 people and a sample of 218 teachers using the Aiken's V; 3) construct validity and reliability by the sample of 218 teachers through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The results show that the rubric has content and construct validity, adequate levels of reliability based on the target population..

Keywords: assessment; instrument; performance; rubric; socioformation; teaching.

Resumen: La evaluación de las prácticas pedagógicas de los docentes se realiza a través de instrumentos orientados en escalas tipo Likert o listas de cotejo que evalúan aspectos generales y cognitivos de la labor docente, omitiendo las acciones pertinentes que se deben implementar con los estudiantes para que se formen como ciudadanos de acuerdo con los objetivos del desarrollo social sostenible. Las rúbricas son muy importantes y necesarias para que los docentes autoevalúen sus prácticas pedagógicas e implementen mejoras en consecuencia. Es por ello que el propósito de este estudio fue diseñar una rúbrica socioformativa para autoevaluar prácticas pedagógicas básicas para lograr un desarrollo social sostenible y determinar validez de contenido, constructo y confiabilidad. Al respecto, se realizó un estudio instrumental basado en los siguientes pasos: 1) validación de contenido por 27 jueces expertos en el área utilizando el mismo formulario en Google; 2) análisis de la validez de contenido, pertinencia y satisfacción general del instrumento, mediante un grupo piloto compuesto por 69 personas y una muestra de 218 docentes utilizando la V de Aiken; 3) la validez y confiabilidad de constructo de la muestra de 218 docentes a través del Análisis Factorial Exploratorio (AFE) y el Análisis Factorial Confirmatorio (AFC). Los resultados muestran que la rúbrica tiene validez de contenido y de constructo, niveles adecuados de confiabilidad en función de la población objetivo.

Palabras clave: desarrollo de software; generación de conocimiento; programación por pares; publicaciones; trabajo en parejas.

Autores

Tania Quiriz
Sindicato Nacional de Trabajadores de la Educación, México.
taniaquiriz@gmail.com

Sergio Tobón
EKAP University, Estados Unidos.
stobon5@gmail.com

José Manuel Vázquez Antonio
Escuela Normal Rural "Lic. Benito Juárez", México.
tlxdoc001@normales.mx

Lourdes Rodríguez-Peralta
Instituto Politécnico Nacional, México.
mlrodriguezp@ipn.mx

Entidad editora

CIFE
Centro Universitario

OPEN ACCESS

Introduction

Teaching assessment is vitally relevant in the Mexican educational system, undoubtedly, it can contribute to improve their pedagogical practices, it allows to determine the scope and aspects to improve in the activities that the teacher carries out with the students in the classroom. Teachers have been assessed for a long time, but with instruments based on Likert-type scales or completely standardized instruments that prioritize cognitive knowledge based on the plans and programs established in the educational system; and focused on the exposure of teachers, so the didactic and assessment processes are no longer really effective for solving problems. Therefore it is necessary to focus on assess their pedagogical practices according to contextual needs and sustainable social development.

To assess the current pedagogical practices of teachers, is important to consider the sustainable social development as a fundamental part of their daily work, it goes beyond implementing any subject on natural sciences or caring for the environment. Sustainable social development implies making changes in the economic, social, institutional, political and educational structure of all the countries in the world to improve and make a change towards a more encouraging situation than the current one that leads to a positive transformation, it means; awareness must be a collective process that begins with education, since it plays a fundamental role, through it, you can follow a path that allows the understanding of the existing problems in a global way; which affect every person on the planet. Likewise, it can be promoted and generated the necessary skills to help find joint solutions from a vision towards the future (Tobon y Luna-Nemecio, 2021). For this reason, it is urgent to generate educational transformations that focus on training people to ensure the development of a sustainable society (Tobon & Luna-Nemecio, 2015). The role of teachers as leaders in the learning processes in the classroom is fundamental, therefore, an assessment is required according to social demands to improve teaching practices, and thus they can respond to the multiple challenges that the knowledge society brings with it, the needs, interests, styles and learning rhythms of students.

There are different approaches to pedagogical practices, one of them is socioformation; which prioritizes the development of complex thinking in all educational actors through the promotion and development of ethical life projects; that help to solve the various difficulties that students face in their day-to-day lives in the different contexts in which they operate through collaborative work, the promotion of universal values and the co-creation of knowledge. To achieve this change, it is necessary to start from a transformation of thought and institutions so that the actions and thoughts of educational actors are congruent, which leads to developing the ability to relate knowledge to each other and to relate it to the whole where the local is conceived with the global and vice versa in a constant way to improve the quality of life of people, develop human talent and allow the development of a sustainable society (Salazar & Tobon, 2018). For this it is important to prioritize entrepreneurship through the training project as a comprehensive strategy; where people learn to work with innovation, creativity and with their own actions where they put into practice complex thinking and real problem solving, but in order to complete this project, it is necessary to apply knowledge management from different areas, in order to find solutions to the problems that arise, which require continuous reflection and analysis of the knowledge that is being discovered, and that are later organized and systematized according to the needs that exist. Metacognition is also essential for this, which is a benchmark for performance that goes beyond personal reflection and collaborative work since it favors decision-making on a personal and collective level based on established goals and putting all knowledge into practice (Ambrosio, 2018).

From socioformation, pedagogical practices are defined as collaborative actions between the different educational agents such as teachers, managers, advisers and the community so that students and all members of educational institutions learn to solve environmental problems through the management and co-creation of knowledge through relevant sources, the articulation of knowledge and continuous improvement, in an inclusive environment to transform living conditions and

contribute to environmental sustainability. From socioformation, pedagogical practices are not exclusive to teachers but to all educational agents related to formation centers (Tobon & Luna-Nemecio, 2021).

However, pedagogical practices are classified as non-pertinent and pertinent. About the first one, they are those that prioritize the following: 1) content-focused and rote learning; 2) decontextualization of reality; 3) summative evaluations; 4) expository classes without giving opportunity to reflection and autonomy of students and 5) pay greater attention to class planning and the predominance of the teaching role, leaving aside the autonomy of students. The pertinent pedagogical practices, from the socioformation; are specific actions with the students, which allow generating a comprehensive formation process in the students, where teachers carry out actions such as: teach, communicate, socialize, experiment, analyze, reflect from real situations in the environment, generate collaborative work, metacognition, development of complex thinking; and contribute to sustainable social development. It is required to focus on those most representative aspects such as the professionalism of teachers where they are allowed to innovate in the teaching and learning process based on the needs that society demands through the potentialization of creativity, solving problems in the student environment and through the improvement of their teaching practices (Salazar & Tobon, 2019).

From socioformation, 10 pertinent pedagogical practices are proposed to respond to the students' needs and thus they can improve the quality of life of them or their community, these practices that must be considered are: 1) motivation and support to achieve the expected learnings: 2) manage knowledge and the co-creation of knowledge; 3) solving environmental problems and entrepreneurship to favor and improve living conditions; 4) ethical project of life; 5) assertive communication; 6) collaborative work and inclusion; 7) creativity and innovation; 8) transversality; 9) resource management to solve environmental problems and 10) promote metacognitive formative assessment (Ambrosio, 2018).

Some instruments have been developed to assess teaching and pedagogical practices. At the international level, Aminah and Wahyuni (2018) designed a questionnaire based on pedagogical content knowledge (PCK) for mathematics teachers to measure their pedagogical abilities, which was based on three design stages: a) review the related theories; b) assess the PCK related indicators and c) assess the needs of teachers related to the applicable curriculum, The researcher also: 1) designed an outline of instruments to measure the ability PCK; 2) performed a test phase; 3) evaluation and 4) review of the instrument conducted by experts. The designed instrument was made with the following dimensions: 1) subject matter knowledge, (2) general pedagogic knowledge, (3) pedagogic content knowledge, (4) curriculum knowledge, (5) knowledge Learning and characteristics, (6) knowledge of teaching strategies, and (7) knowledge of learning contexts. After content and construct validation by 2 experts in the field, the instrument obtained the value from 3.0 to 5.0. The designed questionnaire was applied to the teachers and values of 4.14 and 4.75 were obtained, this indicate the response was positive.

Sánchez and Sánchez (2019) designed and validated a questionnaire of 52 reagents to assess the pedagogical practices of teachers, which were based on the learning standards of the Flipped Learning model as the only dimension of the instrument. Based on this dimension, they established some domains included in the questionnaire: 1) understanding flipped learning; 2) planning for flipped learning; 3) assessment; 4) learning spaces; 5) individual space mastery; 6) student involvement; 7) communication and culture; 8) professional development; 9) evidence and research and 10) infrastructure. A Likert-type scale was used in four levels, where 0 is the highest level (Strongly agree) and 3 the lowest (Strongly disagree). The content was validated through a group of 12 experts with at least 4 years of experience applying the flipped learning model, the numerical scores assigned by the experts to the questionnaire are 9 and 10, with an average of 9.66 out of 10. To confirm the reliability of the instrument, it was applied electronically to a group of 76 teachers through Cronbach's Alpha in the IBM Statistical Package for the Social Sciences software, values of 0.975 were obtained, which indicates an excellent degree of satisfaction.

In Latin America, Giaconi and Perdomo (2018) designed and validated a questionnaire for Chilean mathematics teachers of basic education (primary and secondary) about their teaching practices and motivational beliefs for solving problems, the instrument was applied to a sample of 579 mathematics teachers who had previously participated in 2015, in professional development workshops focused on problem solving, of the total participants, 53.2% were elementary school teachers, 22.5% were high school math teachers and 12.4% had other education. The instrument was divided into two dimensions: 1) teaching practices during problem solving and 2) motivational beliefs related to problem solving. The questionnaire for structuring the items considered: 1) the theoretical conceptualization of teaching practices and motivational beliefs; 2) analysis of self-reported questionnaires for teachers on similar practices or related to problem solving and motivational beliefs in general terms or in the teaching of mathematics.

The questionnaire consisted of 19 items related to the first dimension referring to teaching practices, through two aspects: 1) student-centered practices (14 items) and 2) teacher-centered practices (5 items). It was used a frequency scale; which ranged from level 1, meaning never; to level 6, always. With regard to the items elaborated on the motivational beliefs of teachers for problem solving, it was divided into three factors: 1) self-efficacy in problem solving (5 items); 2) self-efficacy in teaching (6 items) and 3) usefulness and importance of problem solving (6 items). For the writing of these items they were based on an existing guide from Bandura from 2006, for these questions a scale was used where it was determined from level 1 (strongly disagree) to level 6 (strongly agree). For the validation and reliability of the instrument, an exploratory factor analysis was performed.

In México, Gutiérrez and Chaparro (2019) designed a scale for the self-assessment of teaching practices of basic education teachers, specifically of secondary school students; using the 2013 Danielson Teaching Framework indicators, which designed 104 items, rated and adapted to the Mexican context and later revised by a group of 5 bilingual specialist experts. Likewise, the instrument was reviewed by four secondary school teachers to verify the correct adaptation to the Mexican environment of each of the items and to provide examples and information according to the secondary education curriculum. The instrument consisted of five dimensions: 1) planning (13 items); 2) classroom climate (13 items); 3) teaching (23 items); 4) learning assessment (10 items) and 5) professional responsibilities (11 items). These dimensions were reflected in the creation of 70 items on the scale, where 4 levels of mastery were included: a) null; b) basic, c) intermediate and d) advanced. The instrument was applied to 203 teachers from various areas belonging to secondary education. The instrument was validated and the reliability verified by calculating the ordinal alpha coefficient, which showed a reliability index of .98 and acceptable adjustment indices in the confirmatory factor analysis, which corroborates the congruence of the items with the construct.

Based on the above described, it is noted that the designed instruments prove to be relevant but there are detected some limitations and gaps, for example: 1) they are based on theory to design the instrument, which does not assess the real competencies of teachers; 2) the resolution of environmental problems takes a back seat by literally considering the competencies established in a theoretical way; 3) aspects referring to the context, the solving of real problems is not considered; 4) Feedback from teachers themselves is not considered to improve their practices. Therefore, there is a need to use instruments that consider the self-assessment of teachers with certain periodicity to achieve improvements in the teaching and learning process that allow solving the problems of the students' context, also strengthening the work of teachers to generate better living conditions for families and the community.

It is necessary that the pedagogical practices of teachers consider socioformation, understood as a new approach that considers the humanist spirit that allows the use of complex thinking to solve the various problems of society, using information technologies in a way pertinent and collaborative work, also retaking elementary universal values to form a more just and reality-conscious society to have better living conditions, since it prioritizes contextual problems (Tobon & Luna-Nemecio, 2021), relegating curricular content to a second tier as it focuses on solving the needs and difficulties that arise in the community in general, families, schools and personal lives of individuals, for this

reason the socioformative approach includes teachers as mediators of knowledge to train students aware of its reality capable of generating new knowledge and training better people; To achieve this, the socioformative approach includes the promotion of ethical life projects because it seeks to generate innovation processes inside and outside the classroom to lay the foundations of a knowledge society (Ambrosio, 2018).

The knowledge society is characterized by being a source of development for all people, it requires the activation of the intellectual ability to produce, transform and use information and knowledge to achieve a true human development with autonomy, solidarity, and respect, integral and participatory. Visualizing pedagogical practices from socioformation is a proposal that redefines the role of the teacher in the teaching processes used in recent years, since this approach implies working in a collaborative way solving the various difficulties of the context in the face of the challenges that education brings with it. knowledge society, where the teacher must act from a socio-critical practice to improve the quality of life of the community, which requires a social change to strengthen common projects from an analytical and innovative perspective.

Therefore, the design of a new instrument in the form of a rubric is proposed that prioritizes the self-assessment of specific aspects of the socioformative teaching practice such as motivation, identification of context problems, values, in such a way that it is appropriate to the challenges and improvements present in current training. The goals of this study are: 1) to design a pertinent and efficient self-assessment rubric to evaluate the practices of teachers considering the challenges of the knowledge society and the socioformative approach; 2) carry out the content validation of the instrument with a group of judges and a pilot group, to determine the relevance and wording of the items; 3) analyze the reliability of the instrument and 4) test the construct validity through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

Methods

Type of study
An instrumental study was carried out focused on the design, validity and reliability of a rubric to self-assess the pedagogical practices of teachers that current society requires according to sustainable social development. This type of study consists of the construction of an evaluation or research instrument, for the assessment of its validity, reliability and the verification of the factorial composition of the construct that an instrument intends to measure (Montero & León, 2007), the validity is understood as an evaluation criterion used to establish the importance of empirical evidence and the theoretical elements that justify the instrument, it is also the degree to which the instrument meets the objective for which it was created. The rubric prepared was applied in print.

Phases

The validity and reliability study of the instrument was carried out through the following stages:

Phase 1. Design of the rubric: A socioformative analytical rubric was designed, which is an instrument focused on assessing each indicator of evidence through mastery levels and descriptors that provide accurate information to establish the level of performance of each indicator, the socioformative analytical rubric generates feedback to improve continuously.

The design of the instrument was made through a review of the recent literature regarding pertinent practices from socioformation and other currently existing approaches, considering information in databases such as Google Academic, Redalyc, Scielo, Web of Science and Scopus. Likewise, the mediation axes proposed by the socioformative approach were analyzed, understood as the articulation of the actions carried out by the teacher to achieve the comprehensive training of students and the resolution of conflicts in the context based on sustainable social development. with the aim

of training citizens with a clear ethical life project, entrepreneurs and constants to face social and life challenges. Considering this, a rubric was elaborated following the socioformative methodology through the following steps: 1) precision of the basic pedagogical practices that teachers must self-assess in their professional activity to convert formation according to sustainable social development; 2) choice of performance levels, taken from the socioformative taxonomy: very low level, low level, medium level, medium high level and very high level, which belong, in turn, to the original levels of this taxonomy, which are : preformal, receptive, decisive, autonomous and strategic (Sánchez-Contreras, 2019); 3) in each of the recognized practices, descriptors were constructed according to the meaning of the level from the same socioformative taxonomy; 4) a score was established for each of the practices out of 100; and 5) the rubric was reviewed several times individually and among the team of authors. In the descriptors, each of the practices ranging from a traditional action focused on content (very low and low level) to a socioformative approach focused on the challenges of sustainable social development (very high) was considered.

Phase 2. Experts review: Once the design of the socioformative rubric for the self-assessment of pedagogical practices was completed, it was thoroughly reviewed by three experts in the field with extensive experience in carrying out rubrics of this type in the teaching area. The experts who participated in this process had the following attributions: doctorate degree in education, minimum experience of 10 years, publications regarding the design and validation of rubrics, and minimum 10 scientific articles published on assessment processes. During the review, the experts reaffirmed and made specific suggestions for the improvement of pedagogical practices and descriptors, until the rubric was accepted by all.

Phase 3. Content validity study: Once the design of the rubric was completed, it was evaluated by 27 judges (Table 1) with experience in instruments review, experience in research and a minimum level of master's degree. This review was carried out in a general way through a form *Google Forms*.

The evaluation by the judges was in two phases, the first was quantitative by evaluating the relevance and writing of each of the items in the rubric with a scale of 4 levels for each criterion and the second phase was qualitative, which consisted of providing suggestions for improving the reagents. A level of concordance of the judges' assessment was obtained using the Aiken's V index, which allows having possible values to be statistically verified through the group of judges (Aiken, 1985), this coefficient is a technique to quantify the content validity or relevance of the items referring to a content domain N of judges, ranging from 0.00 to 1.00, which means that the value 1.00 is the highest possible magnitude, thus indicating a perfect agreement among the judges regarding the highest content validity score evaluated.

Table 1.
Profile Data of the judges

Features	Data
Q	27
Education level:	Master degree: 2 PhD: 25
Areas of professional experience:	- Teaching - Instrument design - Organizational process - Environment - Postgraduate teaching - Social process - Psychological processes - Healthy processes
Number of years of experience as a professional (average ± dt¨*):	18.3 years (± 10.1)
Number of years of experience in teaching-research (average ± dt¨*):	10.9 years (± 5.3)
Number of articles published (average ± dt¨*):	9.3 (± 20.9)
Number of books published (average ± dt¨*):	2.3 (± 4.9)
Number of book chapters published (average ± dt¨*):	1.4 (± 5.8)
Experience in the review, design and / or validation of a specific research instrument	Yes: 100%

Note: *standard deviation

Phase 4. Application of the test to a pilot group.

After the content validity, the instrument was applied to a pilot group composed of 69 teachers with a minimum academic degree of bachelor's degree and professional experience in basic education (Table 2). This was done to establish the level of understanding of the instructions, practices and indicators, as well as to determine the average time of duration of the application in printed form and the degree of writing and relevance in the rubric based on the same scale that is used by the judges. In the same way, they were asked to give suggestions to improve the writing.
The teachers self-assessed their performance with this instrument and at the same time answered several questions on sociodemographic aspects for the statistical process of the data.

Table 2.
Sociodemographic Data of the Pilot Group

Features	Data
Q	69 Basic education teachers
Gender	9.7 % male; 90.3 % female
Age (average ± dt¨*)	Average 30.6 years (± 7.1)
Area of residence	Tlaxcala

Quiriz, T., Tobón, S., Vázquez, J., & Rodríguez-Peralta, L. (2022)

Years of higher education (average ± dt¨*)	Average 4.9 years (± 0.8)
Years of experience as a professional (average ± dt¨*):	Average 12.7 years (± 8.3)
Education level	Bachelor's degree: 60
	Master degree: 9
Areas of professional experience	Teaching
Economic conditions	Very low level: 0%
	Low level: 0%
	Medium level: 95.2%
	Medium high level: 4.8%
	Very high level: 0%

Note: *standard deviation

Phase 5. Relevance and writing assessment.

After application to the pilot group, adjustments were made to the rubric in the writing of some of the descriptors, based on this, it was applied to a non-probabilistic sample of basic education teachers (preschool, primary and secondary). Teachers were invited to participate in the study in person, 218 teachers finally accepted. They completed the instrument in printed form and evaluated the degree of clarity of writing of the descriptors and the relevance of the rubric; following the same scale by the judges and the pilot group. Table 3 describes their sociodemographic characteristics.

Table   **3.**
Sociodemographic data of the participants

Features	*Data*
Quantity 218	
Gender	33.5% male
	66.5% female
Age (average ± dt¨*)	37.8 years (± 9.8)
	80% married
Maritl status	15% single
	5 % divorced
Years of higher education (average ± dt¨*)	5.8 years (± 1.3)
Economic conditions	20% Excellent
	40 % Good
	30 % Regular
	10 % Bad
Area of residence	Tlaxcala
Working status	5 % Excellent
	15% Good
	50% Regular
	30% Bad

Note: *standard deviation

Phase 6. Construct validity and reliability

After analyzing the relevance and clarity of the wording, the construct validity was analyzed in the same group of 218 basic education teachers. For this, the sample was randomly divided into two subsamples of 109 teachers. With the first group, the construct validity analysis was carried out through Exploratory Factor Analysis (EFA), this technique is the most recommended to reduce dimensions and find the ideal structure to define factors or variables that are correlated with each other. Prior to the analysis of compliance with the requirements for this technique, it was verified that the data met the necessary conditions, by observing the correlation matrix, the KMO index (Kaiser Meyer Olkin) and the Bartlett test of sphericity (Costello, & Osborne, 2005).

After this, the unweighted least squares extraction method was selected, which has been shown to be effective in controlling problems related to the violation of the multinormality assumption, very common in Likert-type scales like this one (Forero et al., 2009) The number of factors to conserve is based on Kaiser's rule to retain factors whose eigenvalues are greater than 1. Finally, the reliability of the rubric was evaluated through Cronbach's Alpha coefficient. Subsequently, with the second group, a Confirmatory Factor Analysis (CFA) was carried out to test the model obtained in this first phase. Usually, it is accepted that the combination of three measures of goodness of fit are sufficient indicators of fit of the model: a normalized chi-square (χ^2/gl) less than 3, a Tuckler-Lewis index (TLI) or Comparative Fit (CFI) greater than .95, and a mean square error of approximation (RMSEA) less than .80. However, in the case of the unweighted least squares method, it has been found that these indices tend to be overestimated (Xia & Yang, 2019).

To solve this problem, recent studies recommend using the criterion of combining a CFI> .95 and an SRMR <.09 for samples smaller than 250 participants (Hu & Bentler, 1999), since the SRMR remains stable regardless of the factoring method used. To ensure that the final model fits the data, in this study, we chose to report the normalized chi-square, TLI, CFI, RMSEA, and SRMR. To evaluate the convergent validity of the model, that is, if the items of the instrument are related to each other, three measures were used. First, the factor loadings must be greater than .05; A convergent reliability measure was used, similar to Cronbach's alpha, but which does not show the dependence on the sample size and the number of items typical of this measure, but is based precisely on the factor loadings of the items, called the index composite reliability (CR); and finally the average variance extracted (AVE) of the resulting factor (s) was calculated, following the formula of Fornell & Larcker (1981), which suggests that a value greater than .50 is desirable.

Ethical aspects
This research complied with the guidelines of respect for people that are stipulated in APA (American Psychological Association), likewise the norms that are stipulated in the Law of Protection of Personal Data in Mexico, which were present throughout the investigation. It should be noted that each participant was informed in a timely manner about the purposes of the study and agreed to participate.

Results

Design of the rubric
A socioformative rubric was designed to self-assess the pedagogical practices relevant to the challenges that sustainable social development entails, which means making changes to the existing instruments in the area. In the process of drawing up the instrument, it was sought to address the key axes that influence to train people committed to the generation of projects for the improvement of society and care of the environment, as well as entrepreneurs to solve the various situations they face in your day to day. Table 4 describes the rubric, which is made up of 8 essential pedagogical practices, each practice is evaluated through five levels of mastery, where each level has a descriptor that helps to evaluate it.

Quiriz, T., Tobón, S., Vázquez, J., & Rodríguez-Peralta, L. (2022)

Table 4.
Pedagogical practices evaluated in the rubric

Pedagogical practice	*Descriptors by level of mastery*
1. Sensitization. At what level does it make students aware of the environment and commit themselves to solving a specific problem in their context?	1. VERY LOW (pre-formal): I cannot get students to be sensitive to different situations in their environment because they are not a priority, as are curricular topics. 2. LOW (receptive): Sometimes I get students to be sensitive to the problems of the context, through real-life examples. 3. MEDIUM (decisive): I get students to have sensitivity and motivation faced with the problems of the surroundings from the approach of their previous knowledge. This is articulated with the learning or the expected learning of the curriculum. 4. HIGH MEDIUM (autonomous): I get students to diagnose the problems of the context so that they have sensitivity to them. 5. VERY HIGH (strategic): I get students to engage in the resolution of high impact problems in the context, with creativity, perseverance and ethics.
2. Problem solving. At what level does the student identify, understand, explain and contribute to solving a problem in the context in which they develop?	1. VERY LOW (pre-formal): I never get students to identify or contribute to the resolution of a context problem because it is not a priority in the classes. 2. LOW (receptive): Sometimes I get students to identify a problem in the context and take it into account in the learning process. 3. MEDIUM (decisive): I get students to understand and contribute to solve simple problems of the context, in order to achieve the expected learning established in the study program. 4. HIGH MEDIUM (autonomous): I get students to solve contextual problems and explain them, as an essential strategy for the achievement of the expected learning. 5. VERY HIGH (strategic): I get students to solve contextual problems with creative, flexible and innovative strategies, seeking to improve the living conditions of the community or contributing to environmental sustainability.
3. Product: At what level does the student achieve a relevant product in the context, as a strategy to evaluate the expected learning in the curriculum?	1. VERY LOW (pre-formal): I never get students to produce evidence of performance that is linked to other areas and that is relevant in the context. 2. LOW (receptive): Sometimes I get students to deliver a product at the end of the subject or project. However, knowledge of other subjects or disciplines is not integrated. 3. MEDIUM (decisive): I get students to deliver products to evaluate their expected learning.

	4. HIGH MEDIUM (autonomous): I get students to deliver contextualized products to the needs of the environment, through continuous self-assessment and the use of a specific instrument such as rubric, checklist, estimation scale, etc. 5. VERY HIGH (strategic): I get students to elaborate a relevant and pertinent product in the context. With which contribute to improve living conditions and / or the environment, articulating knowledge and methodologies of various subjects and disciplines.
4. Universal values: At what level does the student strengthen and increase universal values such as responsibility, respect, honesty, the promotion of life and equity as part of the ethical project of life?	1. VERY LOW (pre-formal): I never get students to strengthen their values, such as responsibility, respect, honesty, the promotion of life and equity. I do not apply strategies to develop values in class. 2. LOW (receptive): I get students to define and understand the importance of the values, but I do not achieve that they apply them in the daily life. 3. MEDIUM (decisive): I get students to strengthen and apply universal values through the use of concrete didactic strategies in the classroom, such as moral dilemmas, reflections, games, socio-drama and problem solving, among others. 4. HIGH MEDIUM (autonomous): I get students to self-assess continuously on how they are applying the universal values and implement concrete improvements. 5. VERY HIGH (strategic): I get students to support each other and help their families, community and organizations to strengthen and apply universal values.
5. Collaborative work: At what level does the student work collaboratively in class to achieve the expected learning?	1. VERY LOW (pre-formal): I never get students to work collaboratively. Sometimes they do group work, but with little participation and coordination. 2. LOW (receptive): Sometimes I get students to work in groups or teams, but I do not apply concrete strategies to strengthen this. They find it difficult to work in a coordinated way, assume their responsibilities and communicate with clarity, respect and kindness. 3. MEDIUM (decisive): I get students to work collaboratively to achieve a common goal, through the commitment of each participant, respect and cordiality. I seek to respect the ideas of others. 4. HIGH MEDIUM (autonomous): I get students to work collaboratively through self-assessment of their performance and the continuous improvement of what they do. Roles are distributed to work on achieving the goals. 5. VERY HIGH (strategic): I get students to work collaboratively articulating their strengths and that they support each other to be better and achieve greater impact on what they seek.

Quiriz, T., Tobón, S., Vázquez, J., & Rodríguez-Peralta, L. (2022)

6. Complex thought: At what level can you develop complex thought in students?	1. VERY LOW (pre-formal): I never get my students to develop complex thought skills, such as critical analysis, systemic analysis, creativity and metacognition. 2. LOW (receptive): Sometimes I get my students to apply some complex thought skills, such as comparison, questioning, asking questions, imagining new realities, etc. 3. MEDIUM (decisive): I get my students to learn to approach the problems from different perspectives and understand their different interrelated elements. 4. MEDIUM HIGH (self-employed): I get my students to learn to critically analyze problems and apply metacognition in continuous improvement. I help them to self-assess their complex thought skills through concrete instruments. 5. VERY HIGH (strategic): I get my students to contribute to solve the problems of the context generating different options, applying creative strategies and articulating knowledge of several areas, to have impact in the achievement of the goals.
7. Transversality: At what level does the student provide a service or benefit to improve the living conditions of themselves, the educational institution, their families, the community or the environment?	1. VERY LOW (pre-formal): I cannot get my students to provide a service or benefit to improve the living conditions of themselves, the educational institution, the family, the community or the environment. 2. LOW (receptive): On some occasions and in a superficial way I get my students to provide some service or benefit to improve the living conditions and the environment. However, I do not work concrete strategies in the classroom to do it. 3. MEDIUM (decisive): I get my students to provide a service or benefit that improves the living conditions of themselves, their families, the school, the community or the environment, in articulation with the expected learning of the subject. I have planned this in my didactic sequences. 4. HIGH MEDIUM (autonomous): I get my students to self-assess when providing a service or benefit to improve the living conditions or the environment, seeking to improve them continuously. 5. VERY HIGH (strategic): I get my students to contribute to improve living conditions or the environment with actions that have creativity and continuity, until achieving impact in having a better quality of life or environmental sustainability.
8. Quality of life and environmental sustainability: At what level does the student seek, analyze, create and apply scientific knowledge in solving a problem of the educational	1. VERY LOW (pre-formal): I get my students to approach the textbook to understand the topics, without solving problems of the context. My students do not know how to search for knowledge in different sources,

institution, family, community or environment?	organize it, analyze it and apply it, or it's very difficult for them.
	2. LOW (receptive): I sometimes get my students to apply the textbook themes in solving context problems.
	3. MEDIUM (decisive): I get my students to learn to seek, organize, understand and apply scientific knowledge in solving problems in the context, using resources complementary to the textbook.
	4. HIGH MEDIUM (autonomous): I get my students to learn to search, organize, understand, analyze critically and apply scientific knowledge from different sources (including the textbook) in the resolution of problems of context, with support in self-reflection to improve in this area.
	5. VERY HIGH (strategic): I get my students to adapt, modify or generate knowledge that allows them to solve problems, articulating different knowledge.

Experts review

The instrument was thoroughly reviewed by the 3 experts who collaborated in the project. They were given a complete version, previously revised by the authors, and they participated by improving the 8 pedagogical practices in their writing, approaches and the various descriptors. The experts made several improvements until all three approved the rubric, some of the improvements made were: 1) clarification of the problem's term from the context so that potential users better understand what it refers to; 2) refinement of the expressions of the descriptor's gradualness levels to achieve a better understanding of them; 3) reconstruction of some descriptors to make them simpler; and 4) adequacy in writing, spelling and syntax of the practices and their respective descriptors.

Content validity

There was agreement among the 27 judges that the rubric of pedagogical practices of teachers according to sustainable social development has relevance, appropriate clarity of the wording of the aspects that are evaluated since in general all pedagogical practices obtained levels of Aiken's V higher than 0.80, which indicates an adequate agreement level, with the exception of item 3 which, in terms of its writing, obtained a value of 0.79 that can be accepted in initial studies of an instrument, such as this one. This indicator was revised and improved in its wording. Table 5 describes the values obtained in the agreement between the judges for each evaluated practice, in the criteria considered. This shows that the instrument has content validity.

Table 5.
Content validity results

Pedagogical practices	Relevance Average value (avg ± dt¨*)	V	Writing Average value (avg ± dt¨*)	V
1	3.6 (0.506 ±)	0.85185185	3.4 (0.500 ±)	0.80246914
2	3.5 (1.014 ±)	0.83950617	3.4 (1.012 ±)	0.81481481
3			3.4 (0.492 ±)	0.79012346
	3.7 (0.465 ±)	0.90123457		
4	3.6 (0.577 ±)	0.85185185	3.4 (0.572 ±)	0.80246914
5	3.8 (0.577 ±)	0.92592593	3.6 (0.564 ±)	0.87654321
6	3.6 (0.572 ±)	0.86419753	3.4 (0.500 ±)	0.80246914

Quiriz, T., Tobón, S., Vázquez, J., & Rodríguez-Peralta, L. (2022)

| 7 | 3.6 (0.564 ±) | 0.87654321 | 3.4 (0.500 ±) | 0.80246914 |
| 8 | 3.6 (0.693 ±) | 0.86419753 | 3.5 (0.579 ±) | 0.82716049 |

Note: *standard deviation

Application to the pilot group

In the pilot group of 69 teachers, it was agreed that the rubric has adequate levels of relevance, writing of practices and descriptors; Aiken's V values were greater than 0.80, and the mean in each of the variables was greater than 3.5, which is an acceptable level (Table 6).

Table   **6.**
Assessment of the instrument by the pilot group

Pedagogical practices	Relevance Average value (avg ± dt¨*)	V	Writing Average value (avg ± dt¨*)	V
1	3.6 (0.499 ±)	0.85507246	3.6 (0.499 ±)	0.85507246
2	3.7 (0.737 ±)	0.89371981	3.6 (0.746 ±)	0.87922705
3	3.6 (0.550 ±)	0.8647343	3.6 (0.553 ±)	0.85990338
4	3.7 (0.581 ±)	0.89371981	3.7 (0.560 ±)	0.88888889
5	3.6 (0.574 ±)	0.86956522	3.6 (0.596 ±)	0.87439614
6	3.7 (0.666 ±)	0.90338164	3.6 (0.617 ±)	0.87922705
7	3.6 (0.627 ±)	0.85990338	3.6 (0.641 ±)	0.87922705
8	3.6 (0.663 ±)	0.87922705	3.6 (0.666 ±)	0.87439614

Note: *standard deviation
Average application time (in minutes) = 20.6 (5.566 ±)

Relevance and writing

The application in the 218 teachers of basic education, denotes that there is a good degree of agreement on the rubric since it has relevance, clarity in the writing of the practices and their descriptors; because the values in Aiken's V were greater than 0.80 and with a mean greater than 3.5, which are acceptable values (Table 7).

Table 7.
Assessment of the instrument by the target population

Pedagogical practices	Relevance Average value (avg ± dt¨*)	V	Writing Average value (avg ± dt¨*)	V
1	3.6 (0.561 ±)	0.87920489	3.6 (0.498 ±)	0.85168196
2	3.6 (0.706 ±)	0.87920489	3.6 (0.728 ±)	0.86085627
3	3.6 (0.543 ±)	0.86850153	3.6 (0.516 ±)	0.85015291
4	3.9 (2.727 ±)	0.96636086	3.7 (0.539 ±)	0.90214067
5	3.7 (0.559 ±)	0.89908257	3.6 (0.593 ±)	0.87920489
6	3.7 (0.645 ±)	0.89755352	3.6 (0.592 ±)	0.88990826
7	3.6 (0.576 ±)	0.86850153	3.7 (0.621 ±)	0.882263
8	3.5 (0.652 ±)	0.83333333	3,7 (0.681 ±)	0.87614679

Note: *standard deviation
Average application time (in minutes) = 20.5 (5.569 ±)

Construct validity and reliability

The relevance of the application of the EFA was verified through the results of the Bartlett test (χ^2 = 251.173 518.540; p<0.001) and the Kaiser-Meyer-Olkin index (KMO: 0.842). It is specified that the correlations were statistically significant between all the teaching pedagogical practices (see Table 8).

Table   **8.**
Correlation matrix

Indicators		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Correlation	1	1.000							
	2	.362	1.000						
	3	.335	.458	1.000					
	4	.379	.379	.328	1.000				
	5	.333	.409	.317	.525	1.000			
	6	.441	.370	.393	.513	.518	1.000		
	7	.346	.337	.272	.550	.373	.479	1.000	
	8	.262	.385	.360	.381	.403	.395	.371	1.000
(Unilateral)	1		.000	.000	.000	.000	.000	.000	.000
	2	.000		.000	.000	.000	.000	.000	.000
	3	.000	.000		.000	.000	.000	.000	.000
	4	.000	.000	.000		.000	.000	.000	.000
	5	.000	.000	.000	.000		.000	.000	.000
	6	.000	.000	.000	.000	.000		.000	.000
	7	.000	.000	.000	.000	.000	.000		.000
	8	.000	.000	.000	.000	.000	.000	.000	

a. Determiner = .088

A single factor was identified, which explains 45.333% of the variance, with an initial eigenvalue of 3.627. This factor includes the eight essential pedagogical practices proposed, whose communalities and factor loadings are presented in Table 9. Although some communalities present relatively low values, no item was eliminated from the analysis, because all of them loaded without problem in the factor and due to its theoretical relevance. Furthermore, authors such as Child (2006) suggest that items with communalities with values higher than .20 can be used in factorial models.

Table 9.
Communalities and factorial load

	Communalities	Factorial load
Practice 1	.294	.542
Practice 2	.442	.665
Practice 3	.239	.489
Practice 4	.446	.668
Practice 5	.548	.741
Practice 6	.463	.681
Practice 7	.224	.473
Practice 8	.377	.614

Finally, the reliability of the instrument was obtained, which was 0.826, measured by the Cronbach's alpha coefficient.

Once the EFA was concluded, the CFA was carried out with the second subsample to test the one factor model obtained. The resulting analysis showed that the one-factor model fits the data, χ^2/df=1.147, CFI=.952, TLI=.933, RMSEA=.037, SRMR=.072. Although the TLI is slightly lower than recommended (> .95), it remains within a reasonable margin, considering that the other goodness-of-fit measures exceed the expected thresholds, especially the combination of CFI> .95 and SRMR <. 90. Furthermore, the model did not require adjustments related to error covariances (see Figure 1)).
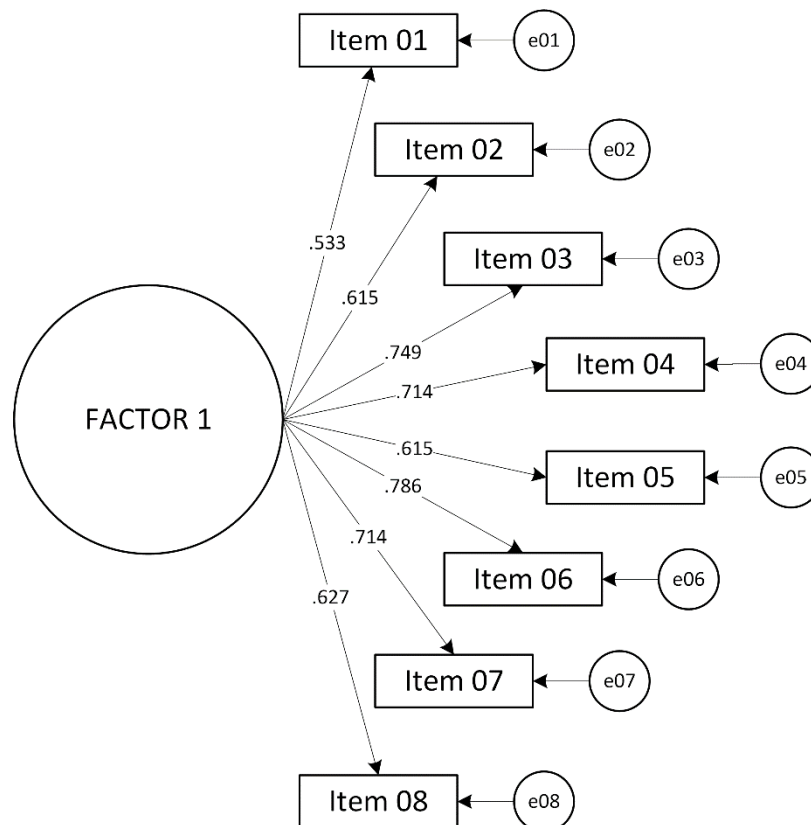

Figure 1. Confirmatory factor model.

The factor loadings of the different variables exceeded in all cases the minimum value of .50, with an AVE of .45, slightly below the expected value of .50, but, since it is a first approximation, it has been considered as suitable in this study. The reliability of the instrument was also good (α = .850), even when using the composite reliability index (CR = .868). Overall, the results of the CFA suggest that the one factor model found in the AFE shows good psychometric properties for its use.

Discussion

The purpose of this study was to build and validate a socioformative rubric on elementary pedagogical practices to achieve sustainable social development. There are no rubrics with these characteristics based on the review made in Scopus and Web of Science, a detailed methodological process was necessary for the design of this instrument.

For this, an extensive review of the literature was carried out to learn from this type of instruments, which are considered as an instrument that allows the synthesis of the planning and assessment processes; it also allows teachers: 1) to lead students towards the achievement of learning; 2) orient students from different contexts through feedback through self-assessment, co-assessment and hetero-assessment; 3) solve problems in their actions in the knowledge society; 4) view their actions from complexity to improve the quality of life; 5) positively impact the transformation of educational, social, business, industrial and governmental institutions by establishing the design of strategies with collaborative learning environments, teamwork and inclusion (Guevara et al., 2020).

Subsequently, the rubric was designed with the support of experts with considerable experience in this methodology supported by publications in this subject; Afterwards, the rubric was evaluated by 27 judges with experience in this subject, so their assessment is reliable, it should be noted that several studies point out the importance of expert judgment to ensure the relevance of the instruments, since they are informed opinions of people with experience on this subject and can provide information, evidence, judgments and assessments to enrich the instruments and to improve them.

The validity of an instrument through expert judgment allows an analysis to be made on the coherence of the items, this methodology is the most used to perform the content validity. With the validation of the instrument through expert judgment, the content validity was achieved, based on adequate levels of agreement on relevance and writing (levels greater than 0.8 in relevance and greater than 0.75 in writing, which are considered adequate according to Oviedo and Campo (2005). It is worth mentioning an element regarding the validity of the content, is that it was not done only with the expert judges, it was also analyzed with the final users of the rubric, that is, the basic education teachers who work in some public institutions, in order to determine if the instrument helps them in their work. This has been lacking in other similar instruments (Bolívar et al., 2017). In relation to this, it was found that among teachers there was agreement on the relevance and clear wording of the 8 practices and their descriptors, with Aiken's V values greater than 0.80, which allows us to observe that the instrument will possibly be considered relevant in school teachers to self-assess essential pedagogical practices according to sustainable social development and improve them, it can also be stated that the instrument is in line with theoretical advances and may be relevant for future research.

The rubric focuses on the assessment of 8 essential pedagogical practices to train the people that the world requires to improve living conditions of them and the others, by caring for the environment with impact actions that stop global warming, poverty, inequality and improve coexistence through inclusion. For this, the instrument is composed of eight pedagogical practices such as: 1) raising awareness among students; 2) context problem solving; 3) find the activities to solve the adversities of their environment; 4) promote and strengthen universal values; 5) generate collaborative work; 6) develop complex thinking; 7) favor the transversality of knowledge; and 8) optimizing the quality of life of students and strengthening sustainable social development.

Apart from the validity of content, relevance and writing, the rubric has construct validity, an essential element in this type of study. On this, the communalities were adequate and a single factor was found in which the eight essential teaching pedagogical practices were integrated, which must be

self-assessed in order to improve their teaching practice according to sustainable social development and to solve real problems of the context. Definitely, the rubric has good reliability, which means that there is consistency between the items since the result was 0. 0.826, which establishes a good level of agreement, so the study shows that the instrument It has adequate reliability values taking as a reference Oviedo and Campo (2005), who establishes that Cronbach's Alpha values between 0.70 and 0.90 mean a good degree of internal consistency in an instrument. That is why the reliability of the socioformative rubric to assess the pedagogical practices of teachers was good, which shows that it has internal consistency.

These practices are totally different from the contents evaluated by other instruments that exist in the medium, such as Malva, Leijen and Baucal (2020), designed a survey to measure the general pedagogical knowledge (GPK) of teachers in Estonia. The instrument was applied to a pilot group of 393 teachers, of whom 170 were in-service teachers, 175 pre-service teachers (students or recent graduates), and 48 teacher educators. The instrument considered the following dimensions and sub-dimensions: 1) instructional process (teaching method, lesson planning and classroom management); 2) student learning (learning and affective development - motivational dispositions); and 3) evaluation (procedures for evaluation, diagnosis and literacy in data and research). In addition to these dimensions, other types of knowledge were addressed: 1) theoretical-practical knowledge (formal, systemic, ordered and independent of the context); and 2) practice-based knowledge (professional judgment in context-specific situations).

The survey consisted of 59 items, which were simple and complex multiple-choice questions based on: a) description of the situation (easiest), b) connected to situations with theoretical concepts (moderate); c) theoretical knowledge (difficult). Some of the items were adapted from the test of the Study of teacher development and education in mathematics, which were validated in different countries, other items were validated by a group of experts who were experienced school teachers, representatives of the departments of teacher training at universities and the Ministry of Sciences and Education. To evaluate the quality of the items, the parameter model was used through the Rash measurement to assess the discrimination index equal to 1.0, through the analysis in the Winsteps software, qualitative content analysis of the items was also performed in different groups and an analysis of differential item functioning. The Cronbach's alpha value was 0.79 overall for the instrument.

In the same way, Yin et al. (2019) designed a scale on loving pedagogical practices, the participants were 114 pre-service teachers (students or graduates) from the higher education program of Concordia University of Edmonton, Canada. The dimensions that were considered were 2, based on the scales developed by Loreman in 2011: 1) loving pedagogy-individual reflection; and 2) loving pedagogy-implementation in the classroom, which include aspects such as: kindness, empathy, intimacy, union, sacrifice, forgiveness, acceptance and community. The instrument was made up of 29 items, the responses were measured using a Likert-type scale where 1 equates to totally disagree to 4 which is strongly in agreement. For the validation of the scale, an analysis of data components was carried out and through the Kaiser-Meyer Oklin test, where values of 0.78 were obtained. To assess the reliability of the instrument, the Cronbach's alpha coefficient was used, where the value of 0.90 was obtained for the scale.

Finally, Pedroza and Luna (2017) developed 30 rubrics with 39 items in total, to assess the pedagogical practices of preschool teachers, the construction process consisted of 3 aspects: 1) planning; 2) intervention; and 3) evaluation. Each of these elements was divided into dimensions and sub-dimensions, in the case of planning it was distributed into the following: 1) educational intention (intention congruent with the PEP 2011 and intention according to the needs of children); 2) knowledge of the students (clear intention); 3) design of the learning situation (activities consistent with intentions, activity consistent with field focus and plan for evaluation); and 4) cognitive demand. Likewise, for the intervention aspect, it was divided into two dimensions: 1) pedagogical principles of the program, divided into 9 subdimensions (recovers previous knowledge, promotes interaction between children, encourages the desire to learn, makes the content interesting/strategies, promotes

participation and responsibility in learning, rules, collective demand of the activity, mastery of the content and congruence with the planned); 2) classroom environment for learning, with 5 subdimensions (warm / verbal communication, warm/non-verbal communication, clear instructions, error handling, group order, use of time in activities, use of time in the day and attention to diversity). Finally, for the evaluation, 1 dimension was considered: evaluation of classroom interaction, which consisted of 4 sub-dimensions (monitoring, feedback, reflection on the learning process and recognition).

The instrument was applied to a group of 19 educators. To evaluate these rubrics, 8 judges and an expert educator were sent. The rubric was built according to 4 mastery levels: 1) unsatisfactory; 2) in process; 3) competent and 4) expert. To determine the dimensions, an analysis was carried out with the Rash Master Partial Credits Model of 1982, where values were obtained in the INFIT and OUTFIT statistics in a range of .7 and 1.3, the biserial correlation is greater than .40, likewise 4 rubrics are outside these parameters with values from -2.2 to 3.35 on the logit scale. For this instrument, an exploratory factor analysis was carried out, where a final variance of 66% was explained, where the evaluation factor and learning environments obtained a percentage greater than 50%, planning 9.8% and pedagogical principles with 6%. The Goodness of Fit Index (GFI) obtained a value of .739, the Root Mean Square Residual (RMSR) was 0.63 and the reliability analysis using Cronbach's Alpha was greater than 0.85. These instruments focus more on the activities and tasks that must be done in any teaching process, but they do not address the elements that are needed to transform living conditions.

The rubric that was designed and validated is an instrument that prioritizes self-assessment on the part of teachers to identify the level they have regarding the pedagogical practices expected to train people, considering sustainable social development. To validate the construct and the reliability of this instrument, the exploratory Factor Analysis technique was used through the application to a group of 218 basic education teachers, who answered the instrument. This represents an important achievement of the present study, since there are many instruments that have construct validity and reliability, but they are based on instruments that address disciplinary content and do not seek to make a self-assessment of teaching practices. Likewise, it is an important contribution given that the instruments found and analyzed in the referenced literature do not address this part in depth since they are built on scales without descriptors that precisely guide teachers on their achievements and aspects to improve. The current scales provide qualitative contributions but the alternatives they offer are fixed for the proportions and their values are similar so it does not help teachers to establish which specific elements they should improve in their professional work. Likewise, the scales have a lower level of reliability than the rubrics, since the scales sometimes focus more on one element, which restricts obtaining values that consider other relevant aspects (Hartley, 2013).

This research provides important elements to the assessment of the pedagogical practices of teachers, by proposing and proposing an instrument from the socioformative approach which gives priority to the training of people, as a key aspect for the growth and development of the educational actors involved. as students, teachers, community and authorities, leaving aside pedagogical practices based only on cognitive aspects. Likewise, the socioformative approach considers that an assessment must consider: 1) the problems of the context, which are resolved by implementing actions considering the needs of the environment, which implies analyzing the solution options; 2) feedback; 3) the self-assessment of those involved to help them reflect on their daily work and can strengthen and improve their pedagogical practices (Guevara et al., 2020).

It should be noted that this study is exploratory and is an initial analysis of the rubric proposed to assess the pedagogical practices of teachers, so new studies should be implemented to confirm the data found here and to assess again the validity of the construct to Through a better control of application, in the same way it is necessary to carry out the study of its predictive validity. It is also necessary to study its psychometric qualities through its application in different contexts, such as rural, urban and semi-urban areas, at different levels of basic education (preschool, primary and secondary) and in different modes of education.

References

Aiken, L. (1985) Three Coeficients for Analyzing the Reliability and Validity of Ralings. *Educatlonai and Psychologjcal Measurement 45,* 131-142.

Ambrosio, R (2018) La socioformación: un enfoque de cambio educativo, *Revista Iberoamericana de Innovacion, 76* (1), 57-82. Recuperado de: https://rieoei.org/RIE/article/view/2955

Aminah, N., & Wahyuni, I. (2018). Design of capability measurement instruments pedagogic content knowledge (PCK) for prospective mathematics teachers. *Journal of Physics: Conference Series,* 1-5. doi :10.1088/1742-6596/1013/1/012112

Costello, A.B., & Osborne, J. (2005). Best pr Best practices in explor actices in exploratory factor analysis: four or analysis: four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation,* 10 (7), 1-10. https://doi.org/10.7275/jyj1-4868

Forero, C., Maydeu-Olivares, A., & Gallardo-Pujol, D. (2009). Factor analysis with ordinal indicators: A Monte Carlo study comparing DWLS and ULS estimation. *Structural Equation Modeling, 16:*625-641. https://doi.org/10.1080/10705510903203573

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Giaconi, V., & Perdomo, J. (2018). Prácticas docentes, autoeficacia y valor en relación con la resolución de problemas de matemáticas: diseño y validación de un cuestionario. *ENSEÑANZA DE LAS CIENCIAS*, 36(3), 99-120. https://doi.org/10.5565/rev/ensciencias.2351

Guevara, G., Veytia, M.G., & Sánchez, A. (2020). Validez y confiabilidad para evaluar la rúbrica analítica socioformativa del diseño de secuencias didácticas. Espacios, 41(09), 12-26. Recuperado de: https://bit.ly/31jKiGN

Gutiérrez, N.N., & Chaparro, A. A. (2019). Evidencias de fiabilidad y validez de una escala para la autoevaluación de las prácticas de enseñanza en secundaria. *Perfiles Educativos*, XLII (167), 119-137. https://doi.org/10.22201/iisue.24486167e.2019.167.58854

Hartley, J. (2013). Some thoughts on Likert-type scales. *International Journal of Clinical and Health Psychology*, 13, 83−86. https://doi.org/10.1016/S1697-2600(14)70040-7

Hu, L.T. & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Malva, L., Leijena, A., & Baucalb, A. (2020). Towards measuring teachers' general pedagogical knowledge – A mixed method investigation of a pilot test. *Studies in Educational Evaluation*, 64, 1-13. https://doi.org/10.1016/j.stueduc.2019.100815

Montero, I. & León, O. (2007). A guide for naming research studies in Psychology. *International Journal of Clinical and Health Psychology, 7*(3), 847-862. Recuperado de : https://goo.gl/558yc8

Oviedo, C., & Campo, A. (2005). Metodología de investigación y lectura crítica de estudios. Aproximación al uso del coeficiente alfa de Cronbach. *Revista Colombiana de Psiquiatría*, 24(4), 572-580. Recuperado de https://goo.gl/bEjuz7

Pedroza, L.H., & Luna, E. (2017). Desarrollo y Validación de un Instrumento para Evaluar la Práctica Docente en Educación Preescolar. *Revista Iberoamericana de Evaluación Educativa*, 10(1), 109-129. https://doi.org/10.15366/riee2017.10.1.006

Salazar, E. & Tobón, S. (2018). Análisis documental del proceso de formación docente acorde con la sociedad del conocimiento. *Espacios*, 39(53), 17-30. Recuperado de https://bit.ly/3aQl2er

Sánchez-Contreras, M.L. (2019). Taxonomía Socioformativa: Un Referente para la Didáctica y la Evaluación. *Forhum International Journal of Social Sciences and Humanities*, 1(1), 100-115. dx.doi.org/10.35766/jf1911

Sánchez, M.T., & Sánchez, C. (2019). Design and Validation of a Questionnaire In Order to Assess the Adaptation of Educational Practices to the Flipped Learning Model. Aloma, 37(2), 25-33. Recuperado de: https://bit.ly/31gyzZM

Tobón, S., & Luna-Nemecio, J. (2021). Complex thinking and sustainable social development: Validity and reliability of the complex-21 scale. *Sustainability (Switzerland), 13*(12) doi:10.3390/su13126591

Xia, Y. & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51,* 409-428. https://doi.org/10.3758/s13428-018-1055-2

Yin, L. C., Loreman, T., Majid, R.A., & Alias, A. (2019). The Dispositions towards Loving Pedagogy (DTLP) scale: Instrument development and demographic análisis. *Teaching and Teacher Education*, 86, 1-9. https://doi.org/10.1016/j.tate.2019.102884