



The 21st Century Skills of Elementary School Students in 3T Regions (Frontier, Outermost, and Least Developed Regions)

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Abstract: This research aims to analyze the 21st-century skills of students based on region and school accreditation status in the 3T regions. The method used is a survey with a quantitative-comparative approach. The sample of this study was 1281 elementary school students in the Southwest Sumba Regency. The research instrument was a questionnaire using data analysis techniques including descriptive statistics, normality and homogeneity tests, and hypothesis testing. The results of this study found that (1) there were differences in students' 21st-century skills based on region and school accreditation; (2) by region, hypothesis testing showed that there was no significant difference in critical thinking skills but there was a significant difference in collaboration, communication, and creativity skills; (3) by accreditation, hypothesis testing shows a significant difference in critical thinking skills, collaboration, communication, creativity. Overall, this study provides evidence that the 21st-century skills of students in cities were higher than students in sub-districts and villages, as well as students in schools C-accredited higher than students in schools B-accredited B and unaccredited. This research has implications for the quality and performance of teachers both in designing the curriculum and facilitating the learning process to improve students' abilities and skills.

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Introduction

The 21st century has brought changes in the educational landscape. Students need skills to grow and survive in the future (Erdem, 2019). Jobs nowadays require graduates from educational institutions to have 21st-century skills that are relevant to the challenges and needs of the 21st century (Saputri & Ediyono, 2022). 21st-century skills are very important and required by elementary school students in 21st-century education. Curriculum implementation in elementary schools emphasizes the implementation of 21st-century education so that students are able to master 21st-century skills (Widodo et al., 2020; Zakaria, 2021; Talo et al., 2022). The 21st-century skills taught in elementary schools in Indonesia are critical thinking, collaboration, communication, and creativity (Monika et al., 2022; Chalkiadaki, 2018). Teachers facilitate students to explore and develop their potential through planning, implementation of teaching and learning, and student learning outcomes (Dewi & Purwanti, 2019). Teaching 21st-century skills to primary school students requires teachers who understand and possess 21st-century skills. Even though integrating 21st-century skills into the curriculum and its implementation in primary schools is a must, it is also a challenge for both students and teachers in primary schools (Calacar, 2020; Gyurova & Zeleeva, 2017).



Since 2021, the Indonesian government has revised the 2013 curriculum and implemented an independent learning curriculum. This curriculum has advantages such as being more practical and in-depth because it focuses on essential materials, teachers and students are more independent in the teaching and learning process, and the teaching and learning process is more relevant and interactive (Nurani et al., 2022). Characteristics of the 2013 curriculum in developing 21st-century skills in the educational process are by applying scientific, integrated thematic learning, higher-order thinking skills, and authentic assessment (Daga, 2022). Several studies found that the implementation of the 2013 curriculum can improve the 21st-century skills of elementary school students. Applying an approach to scientific learning based on learning skills and innovation can improve science learning outcomes in fifth-grade students (Meilani et al., 2020). The 21st-century learning planning, implementation, and assessment in the 2013 Curriculum in the province of Jakarta are in the good and very good categories (Andrian & Rusman, 2019). However, the implementation of the 2013 curriculum does not automatically have a positive impact on teachers and students in several schools. A quite often encountered problem is that some teachers are still experiencing difficulties in developing effective and efficient teaching media and materials for students in integrated thematic learning according to the demands of the 2013 curriculum (Demonika et al., 2020). Other difficulties faced by teachers are developing competency achievement indicators, preparing schemes for achieving basic competencies, difficulties developing core activity activities, and difficulties preparing authentic assessments (Palobo & Tembang, 2019).

Based on the data, no comprehensive research on critical thinking, collaboration, communication, and creativity as 21st-century skills in the Southwest Sumba Regency, one of the 3T regions (frontier, outermost, and least developed regions) in East Nusa Tenggara Province, Indonesia. The Indonesian government classifies the Southwest Sumba Regency as one of the 3T regions through President Regulation Number 63 of 2020. It is also designated as a special area based on geographical conditions through the Minister of Education, Culture, Research, and Technology Decree number 160/P/2021. The 3T region is an area where most of the infrastructure is inadequate so only a few people are willing to be placed in the area (Hasthoro & Aambarwati, 2016). In President Regulation Number 63 of 2020, it is stated that least developed areas are districts whose regions and communities are less developed than other regions on a national scale in terms of criteria including community economic, human resources, facilities and infrastructure, regional financial capacity, accessibility, and regional characteristics. Southwest Sumba regency is included in the 3T region based on these criteria. The condition of education in the 3T region is different from other more developed areas in Indonesia. The community has low awareness of sending their children to school, very inadequate educational facilities, limited number and qualified teachers and education personnel (Dudung et al., 2018) which have an impact on the quality of student learning outcomes such as 21st-century skills.

In line with these conditions, evidence was found about the 21st-century skills of both students and elementary school teachers in the Southwest Sumba Regency. For example, the lack of training for teachers on preparing lesson plans based on HOTS, the lack of facilities, especially books related to 21st-century skills, and the Covid-19 pandemic making it difficult for teachers to carry out teaching and learning activities based on HOTS effectively, conditions of the geographical location of the primary school which is far from the regency downtown makes it difficult for teachers to access training on 21st-century skills (Koro et al., 2022). The ability of students to solve PISA (Program for International Student for Assessment) questions in Southwest Sumba Regency shows a large percentage of students



who answered the questions incorrectly, namely 58.76% of students at the level I, 68.90% of students at level 2, 76.43% students at level 3, 75.78% students at level 4, 72.34% students at level 5, and 69.07% students at level 6 (Making & Lede, 2021). The numeracy literacy ability of students in the Southwest Sumba Regency is still in the poor and very poor category (Ate & Lede, 2022). Other research on the contribution of teacher competence to the learning outcomes of elementary school students in Tambolaka sub-district, Southwest Sumba Regency shows that the contribution of teacher competence in diagnosing student learning difficulties by 24.8%, teacher competence in utilizing learning media contributes 20.1%, the contribution of teacher competence in managing the classroom by 24.6%, and the simultaneous contribution of teacher competence in diagnosing learning difficulties, utilizing learning media, managing classes by 46.5% (Pingge, 2016). A study on students' critical thinking skills in Southwest Sumba Regency concluded that students' higher-order thinking skills were still in the poor category. Students have difficulty working on higher-order thinking skills questions. The low critical thinking ability of students occurs due to the low level of student ability, the learning process is not optimal during the pandemic, and students are not accustomed to working on high-level thinking test questions (Suluh & Lede, 2021).

In light of this evidence, it shows that teacher competence contributes to the development of 21st-century skills in elementary school students. On the other hand, students' 21st-century skills are still lacking for various reasons. This condition is due to a lack of habituation and training conducted by the teacher for students (Dalman & Junaidi, 2022), the teacher's understanding of the curriculum is as an administrative tool not for the quality of learning activities (Alwi et al., 2020), students are not used to working on HOTS questions, even teachers have not created HOTS questions for students that influence students' mastery of 21st-century skills (Suluh & Lede, 2021), basic education activities in Sumba are not based on local wisdom so students feel unfamiliar to learning methods and content (Pingge, 2017), teachers in elementary schools do not use authentic assessment in evaluating student learning outcomes (Sole & Anggraeni, 2017), students do not understand teacher explanations in class which have an impact on not understanding critical thinking questions in exams (Ratu et al., 2021). The researcher believes that improving 21st-century skills for elementary school students in Southwest Sumba regency is very notable. The initial step that is very necessary and important in this attempt is by understanding the reality of the 21st-century skills of elementary school students (Mashudi, 2021). Moreover, this study aims to analyze the 21st-century skills of elementary school students by region and school accreditation status in Southwest Sumba regency as one of the 3T Regions in Indonesia. The 21st-century skills are the 4Cs, namely critical thinking skills, collaboration, communication, and creativity (Septikasari & Frasandy, 2018; Sugiyarti et al., 2018; Monica et al., 2021). This research has implications for the design of learning carried out by teachers, the determination of educational policies carried out by the local government of the Southwest Sumba regency, as well as the support of education stakeholders to improve the 21st century skills of elementary school students.

Research Method

This research uses a survey method and comparative quantitative approach (Ibrahim et al., 2018) to compare the 21st-century skills of elementary school students based on (1) city, sub-district, and village; and (2) the accreditation status of schools that have C-accredited, B-accredited, and unaccredited. The population of this research was elementary school students. There are 257 elementary schools in the Southwest Sumba district. The number of primary school samples was 10%, namely 26 elementary schools (Alwi, 2014;

Papilaya & Huliselan, 2016). The sixth-grade students were chosen as samples to fill out the instrument, which amounted to 1502 students. The sixth-grade students who submitted the instruments were 1281 students or 85.3%. The instrument used was a valid and reliable questionnaire about 21st-century skills based on students' perceptions. The number of questionnaire items is 47 items (6 items on critical thinking, 14 items on collaboration, 13 items on communication, and 14 items on creativity). The design of the questionnaire used a Likert scale with 4 answers (never, ever, often, and always).

The data analysis techniques of this research consist of statistical descriptive analysis, normality and homogeneity analysis, and hypothesis testing. The normality and homogeneity test criteria are if the significance > 0.05 then the data is normally distributed and homogeneous. If the significance is < 0.05 then the data is not normally distributed and is not homogeneous (Priyatno, 2013). If the data is homogeneous then the hypothesis testing is continued with the ANOVA test. If the data is not homogeneous then the hypothesis testing used the Kruskal-Wallis test to compare more than 2 variables that are not homogeneous (Quraissy et al., 2021). The criteria to choose hypothesis testing is if the significance > 0.05 then H_0 is accepted, meaning that there is no significant difference between the research variables. If the significance is < 0.05 , then H_0 is rejected, meaning that there is a significant difference between the research variables (Sujarweni, 2022).

Results and Discussion

Descriptions of research results include data descriptions, results of normality and homogeneity tests, and hypothesis testing. The description of the 21st-century skills data includes a description of the data by region and the accreditation status of primary schools.

Table 1: The 21st-Century Skills Data

Variables	Region			Accreditation		
	City	Sub-district	Village	Unaccredited	C	B
Critical thinking	16.06	15.45	15.51	15.33	16.22	15.56
Collaboration	39.73	38.25	35.44	37.15	39.71	36.75
Communication	36.77	34.94	33.63	34.38	36.18	35.09
Creativity	40.61	37.71	36.91	37.69	39.33	38.67
The 21 st -century skills	133.17	126.35	121.49	124.55	131.44	126.06

The data description of students' 21st-century skills by region in table 1 shows that there were significant differences in the average value of 21st-century skills of students both by region and school accreditation. The average value of 21st-century skills of elementary school students in urban areas was higher than that of elementary school students in sub-districts and villages. Specifically, the average value of critical thinking, collaboration, communication, and creativity skills of elementary school students in urban areas was higher than elementary school students in sub-districts and villages. Furthermore, the average value of 21st-century skills of C-accredited elementary school students was higher than that of elementary school students whose schools have not been accredited and B-accredited. In detail, the average score of critical thinking, collaboration, communication, and creativity skills of elementary school students from C-accredited schools was higher than primary school students whose schools have not been accredited and B-accredited.

Hypothesis Testing

The results of the normality and homogeneity test of the data showed that the data were not normally distributed and not homogeneous. Hypothesis testing was continued with the Kruskal-Wallis test.

Hypothesis testing of students' 21st century skills based on region

The hypothesis in this study was H_0 means that there was no significant difference in scores between elementary school students in urban, sub-district, and village areas. H_a means that there was a significant difference in scores between elementary school students in urban, sub-district, and village areas. The decision-making criterion was if the significance > 0.05 then H_0 is accepted, if the significance is < 0.05 then H_0 is rejected.

Table 2: Hypothesis Test Results Based on School Region
Test Statistics^{a,b}

	Critical Thinking	Collaboration	Communication	Creativity
Chi-Square	5.032	56.124	33.264	45.438
df	2	2	2	2
Asymp. Sig.	.081	.000	.000	.000

a. Kruskal Wallis Test

b. Grouping Variable: Region Category

The results of the hypothesis test in table 2 show that critical thinking skills have an Asymp Sig of 0.081 (more than 0.05), meaning that accept H_0 , and reject H_a . This shows that there is no significant difference in the critical thinking skills of elementary school students in cities, sub-districts, and villages. The collaboration skill has an Asymp Sig of 0.000 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there are significant differences in the collaboration skills of elementary school students in cities, sub-districts, and villages. The communication skills have an Asymp Sig of 0.000 (less than 0.05), meaning that reject H_0 and accept H_a . This shows that there are significant differences in the communication skills of elementary school students in cities, sub-districts, and villages. The creativity skill has an Asymp Sig of 0.000 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there are significant differences in the creativity of elementary school students in cities, sub-districts, and villages. So it was concluded that there were significant differences in the creativity of elementary school students in cities, sub-districts, and villages in Southwest Sumba Regency.

Hypothesis testing of students' 21st century skills based on school accreditation

The hypothesis in this study was H_0 means that there was no significant difference in student scores in schools that unaccredited, C-accredited, and B-accredited. H_a means there was a significant difference in student scores in schools that unaccredited, C-accredited, and B-accredited. The decision-making criterion is if significance > 0.05 , H_0 was accepted, if significance < 0.05 , then H_0 was rejected.

Table 3: Hypothesis Test Results Based on School Accreditation
Test Statistics^{a,b}

	Critical Thinking	Collaboration	Communication	Creativity
Chi-Square	9.622	32.347	11.074	6.167
df	2	2	2	2
Asymp. Sig.	.008	.000	.004	.046

a. Kruskal Wallis Test

b. Grouping Variable: School Accreditation Category

The results of the hypothesis test in table 3 show that the critical thinking skills have an Asymp Sig of 0.008 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there was a significant difference in the critical thinking skills of students in schools that unaccredited, C-accredited, and B-accredited. The collaboration skill has an Asymp Sig of 0.000 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there is a significant difference in students' collaboration skills in schools that unaccredited, C-accredited, and B-accredited. The communication skills have an Asymp Sig of 0.004 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there is a significant



difference in the communication skills of students in schools that unaccredited, C-accredited, and B-accredited. The creativity skill has an Asymp Sig of 0.046 (less than 0.05), meaning that reject H_0 , and accept H_a . This shows that there is a significant difference in the creativity of students in schools that unaccredited, C-accredited, and B-accredited in Southwest Sumba Regency.

Discussions

Based on the school region, the quantitative data description showed that the 21st-century skills of students who attend schools in cities were higher than students who attend schools in sub-districts and villages. The 21st-century skills of students who attend schools in sub-districts were higher than students who attend schools in villages. The results of the hypothesis testing showed that a significant difference lay in collaboration, communication, and creativity skills while there was no significant difference in critical thinking skills. This means that the location of the school within the region contributes to the achievement or improvement of 21st-century skills of elementary school students. Meanwhile, the description of data based on school accreditation showed that the 21st-century skills of students in C-accredited schools were higher than students in unaccredited and B-accredited schools. Furthermore, the 21st-century skills of students in B-accredited schools were higher than students in unaccredited schools. The hypothesis test results showed that there was a significant difference in students' 21st-century skills from accredited and unaccredited schools. This means that school accreditation contributes to the achievement of 21st-century skills of elementary school students.

The results of this study showed that there were significant differences in the 21st-century skills of students in cities, districts, and villages. In line with these findings, several studies stated that the school environment is one of the factors that contribute to student learning outcomes (Marlina & Solehun, 2021; Wahid et al., 2020; Jihad, 2017). The learning outcomes of students in cities were higher than those in villages because students in cities find it easier to access quality schools because they have competent teachers, complete facilities, and easier access to information. Furthermore, complete learning resources are available and easy to reach. Meanwhile, schools in villages tend to be more left behind due to limited learning facilities, difficult access to information, incompetent teachers, and even curriculum development that does not accommodate students' needs and local wisdom (Anas et al., 2015; Ervina, 2022). Elementary school teachers in cities are more disciplined because schools in cities apply stricter rules and are easily monitored by school supervisors or officials from the education office compared to schools in villages which tend to be far from government monitoring (Khusaini & Muvera, 2020; Munawala, 2021).

The results of this study also showed that there were significant differences in students' 21st-century skills based on school accreditation status, where the 21st-century skills of students in primary schools with C-accredited were higher than students in elementary schools with B-accredited and the unaccredited schools. Several studies have shown that school accreditation status contributes to student learning outcomes (Khafid & Baraokah, 2016; Brahimi et al., 2016; Yustika et al., 2019). It is because there is a relationship between school accreditation and the quality of school services based on national education standards (Nurasqiyah, 2021). Accreditation serves as an appropriate means for monitoring and legitimizing school quality, accountability, and improving the quality of education, especially influencing school principals and teachers in making educational policies and the quality of learning (Nguyen & Pham, 2021). School accreditation is a comprehensive assessment of the eligibility of a school whose results are manifested in the form of recognition and eligibility



ratings issued by an independent and professional institution (Malik et al., 2020). Accreditation is an important component for improving the quality of education, as well as certification and evaluating the quality of teachers in schools (Diem et al., 2021). The process of school accreditation in Indonesia is carried out by the National Accreditation Board to assess content, process, graduate competency, educator and education staff, facilities and infrastructure, management, financing, and assessment standards in a school (Iskamto et al., 2022). The feasibility and quality of achieving national education standards in a school show the feasibility and quality of an educational institution.

Implementation of school accreditation is expected to improve the quality of educational processes and graduates. However, several studies have revealed that school accreditation does not automatically make teachers ready to carry out 21st-century learning to help students to master 21st-century skills (Purnasari & Sadewo, 2021). School accreditation status does not have a significant effect on students' mathematical and language skills in both private and public schools (Zulfahita et al., 2020). However, it cannot be denied that in other schools, school accreditation greatly influences the quality of graduates by 25.8% (Mahadi & Konadi, 2020), and even the quality of education and graduates can be improved through school accreditation (Azizah & Witri, 2021). Accreditation can improve the quality of education and improve the quality of graduates if the accreditation process is carried out objectively according to predetermined standards.

Educational or psychology experts state that student learning outcomes are determined by many factors such as study group size or class size, instructional leadership, socioeconomic status, students' metacognition or knowledge about themselves, peer tutoring, mentoring by teachers, ownership, and use of information technology, teacher feedback, collaborative learning, individual learning, school climate or culture, parents involvement in the educational process, students' physical and psychological health (Wirda et al., 2020). The teaching and learning process in schools provides learning experiences for students to develop their various potentials. A study of elementary school students showed that the factors that influence student achievement are interests, talents, motivation, and ways of learning (Marlina & Solehun, 2021). Added to that, parenting style at home also plays an essential role in developing students' potential. The better the role and parenting style of parents the higher the student learning outcomes (Ningrum, 2016). Learning media factors also affect the critical thinking skills of elementary school students (Jannah & Atmojo, 2022). For example, the application of learning methods or models such as problem-based learning (Astuti, 2019) or the development of teaching materials encourages students to master 21st-century skills (Monica et al., 2021).

The results of this study have implications to improve the 21st-century skills of elementary school students through improving school accreditation status, improving the quality of teacher competence, and equity of education throughout the Southwest Sumba regency. According to the Basic Education Data Information System (Indonesia: Dapodik) from the Ministry of Education, Culture, Research, and Technology, there are still many elementary schools in Southwest Sumba Regency that is unaccredited and C-accredited (Kementerian Pendidikan Kebudayaan Riset dan Teknologi, 2022). Implementation of accreditation in elementary schools provides quality assurance of schools and teacher performance, teaching and learning activities. This quality is very useful for teachers to help students improve the quality of 21st-century skills (Awaludin, 2017). School accreditation will maintain teachers' commitment to quality education based on national education standards, student commitment to improving 21st-century knowledge and skills, and the



commitment of school principals to carry out continuous supervision of teachers to maintain the quality of education services (Mas & Radjia, 2017).

Improving students' 21st-century skills has implications for the quality of teacher competence and performance. The Southwest Sumba regency education office and the education management foundation are working to improve the qualifications, competence, and performance of elementary school teachers. Efforts to improve the teaching profession can be carried out by increasing teacher qualifications, teacher professional education, optimizing teacher working groups (KKG) and teacher activity centers (PKG), education and training, and publication of scientific work through journals and magazines (Wiyani, 2019). Teacher professional development programs must be supported by a special teacher library for all subjects or fields of study so that teachers can easily find learning materials and references (Putriana, 2016; Aprillia, 2017). Teacher qualifications and certification influence the quality of teacher performance in planning, implementing, and evaluating learning in elementary schools (Hasmiah, 2020; Susanti et al., 2020). Consequently, improving teachers' pedagogic, professional, personality, and social competence will have an impact on their performance in managing learning (Meria, 2016). Teacher qualifications and competencies have a major influence on ensuring that the 21st-century skill-based learning process can be applied to educational activities in schools (Sulaiman & Ismail, 2020).

The disparity in the quality of education in cities and villages is caused by a lack of equity in education. The Southwest Sumba Regency government seeks to improve the quality of education through equal distribution of education in cities and villages which is carried out in a comprehensive and balanced manner according to regional needs, problems, and capabilities (Idrus, 2012). The lack of optimal distribution of teachers in the 3T areas, such as the Southwest Sumba Regency, also makes the quality of education uneven (Putera & Rhussary, 2018). Urgent educational equity in the Southwest Sumba Regency includes school buildings (infrastructure), learning facilities, media and learning resources (such as books), quality teachers and education staff, and teacher welfare, especially honorary teachers (Zulkarnaen & Handoyo, 2019). The effectiveness of the learning process is heavily influenced by the availability of facilities and infrastructure, the quality and quantity of teachers, media and learning resources, and school management (Kennedy et al., 2019). Education equity in cities, sub-districts, and villages will have an impact on improving the quality of education and learning, quality of competence, and teacher performance to develop 21st-century skills of elementary school students in the Southwest Sumba Regency.

Conclusion

The conclusions drawn from the results of this study were: (1) there were significant differences in students' 21st-century skills based on region and school accreditation; (2) in particular, the 21st-century skills of students in C-accredited schools were higher than students in B-accredited and unaccredited schools; (3) the difference according to the results of the hypothesis testing showed that based on the regions there was a significant difference between students 21st skills in the city, district, and village in terms of collaboration, communication, and creativity, except for critical thinking which had no significant difference among those areas; (4) while based on school accreditation the difference in students' 21st-century skills there was a significant difference. These differences can be overcome by improving school accreditation, improving teacher competence and performance, and equalizing the quality of education throughout the Southwest Sumba Regency.



Recommendation

The recommendations made based on the results of this study are; (1) for teachers, teachers design curricula and implement processes based on higher-order thinking skills (HOTS) effectively to improve students' 21st-century skills. For this reason, teachers need to have the qualifications and competencies to design and implement a quality curriculum; (2) school principals, so that principals facilitate teachers in carrying out a quality learning process, especially in developing learning tools, carrying out learning processes, carrying out HOTS-based authentic assessments; (3) the education authorities and education management foundations, to adopt strategic policies to facilitate the improvement of teacher competence either through improving teacher qualifications and professional education or through planned and quality education and training activities.

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