

The 21st Century Skills of Teachers among State Universities and Colleges in MIMAROPA: Basis for a Proposed Training Enhancement Program

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ABSTRACT

Education in this era fosters 21st-century skills to face the challenges and opportunities of today (Begum & Liton, 2018). This study aimed to assess the 21st-century skills of teachers of state universities and colleges in the MIMAROPA region as a basis for the formulation of a training enhancement program. The assessment included evaluations from both students and teachers regarding their 21st-century skills, which were based on the following areas: critical thinking, creativity, communication, collaboration, character, citizenship, and digital literacy skills. The purpose of this study was to find a significant difference in the degree of 21st-century abilities between teachers who were assessed by themselves and students. The researcher used the descriptive approach to characterize the instructors' 21st-century talents, as well as the substantial difference in 21st-century skill levels when respondents were judged by themselves and students. Findings revealed that teachers' level of 21st-century skills as assessed by themselves in terms of creativity (4.57), collaboration (4.51), character (4.64), and citizenship (4.61) are very high. However, their critical thinking (4.29) and computer literacy (4.15) abilities are shown to be high. As assessed by the students, teachers' critical thinking (4.52), creativity (4.56), collaboration (4.53), character (4.61), and citizenship skills (4.61) are very high, while their communication (weighted mean: 4.48) and digital literacy (4.4) are found to be high. The study found no significant difference in teachers' 21st-century competencies as rated by themselves or their students.

Keywords: 21st century skills, digital literacy skills, critical thinking, collaboration, digital literacy

INTRODUCTION

At every level of the educational process, from elementary school to higher education, teachers bear the major role in helping learners develop 21st-century abilities, which are crucial for the advancement of their futures in both their personal and professional lives. (Anagün, Atalay, Kılıç & Yaşar, 2016; Abdullo et al., 2022). Teachers should cultivate 21st-century abilities such as communication, creativity, innovation, metacognition, and problem-solving (Rodrigo et al., 2021).

In order to produce fruitful new generations in terms of both academic ability and fundamental everyday abilities, New Pedagogies for Deep Learning by Fullan and Miller (2015) did not only focus on teaching students the most important learning skills—communication, creativity, critical thinking, and teamwork—but also the newest citizenship, culture, and character traits in light of their future success as individuals and as global citizens. Miller (2015) proposed two additional Cs: Connectivity and Citizenship, whereas Fullan (2015) used the terms "Character Education" and "Culture." Additionally, educational institutions play a significant role in helping students develop their digital literacy abilities since they are among the entities that equip learners to face and conquer challenges of the twenty-first century. In this sense, it is recommended that teachers become more proficient in line with standards, especially those related to digital literacy (Spante, Hashemi, Lundin, et al., 2018).

As a result, equipping teachers with 21st-century skills not only improves their effectiveness as educators but also makes it easier for a skills-based education strategy to be successfully implemented, increasing their effectiveness and efficiency in accomplishing educational objectives.

These categories were adopted for the current study to structure teacher-identified competencies..This paper sought to investigate the level of 21st-century skills of teachers in State Universities and Colleges (SUCs) in the MIMAROPA Region, particularly on the 7 C's, which are communication, collaboration, critical thinking, creativity, character, citizenship, and digital literacy skills. Furthermore, this study will determine how close or far the region IV-B state universities and colleges are able to keep up with the advancements in 21st-century education. The results of this study will be the factual basis of the educational field for the continuous enhancement and monitoring of the application of these vital skills in the teaching and learning process.

METHODS

The researcher utilized the descriptive method of research. A descriptive analysis of a survey on teachers' 21st-century skills, including critical thinking, creativity, communication, collaboration, character, citizenship, and digital literacy, was used to reveal the significant differences between self-assessment and student assessment.

The Cochran formula was used to limit the appropriate sample size; the study has a total respondent of 215 composed of teachers and students in Occidental Mindoro State College (11, 97), Mindoro State University (6, 30), Marinduque State College (9, 21), and Palawan State University (6, 35). The stratified sampling technique was employed to form smaller groups that accurately represent the population under study, ensuring that these groups share similar characteristics.

A researcher-made questionnaire was the main instrument used in this study in assessing the 21st-century skills of teachers in the state universities and colleges in the MIMAROPA Region. It contained two parts: the profile of the respondents and the closed-ended questions, specifically a Likert survey questionnaire that refers to the assessment of the 21st-century skills of teachers in the state universities and colleges. The researcher first sought ethical clearance from the University Research Ethics Committee and, with the supervision of the adviser, formally sought approval from the SUCs to distribute the researcher-made questionnaire via Google Forms. Upon receiving approval, the researcher distributed the link to the questionnaire to Marinduque State College and Palawan State University. The researcher administered the instrument personally to Occidental Mindoro State College and Mindoro State University.

The results were tallied, tabulated, and interpreted. The researcher applied various statistical techniques to the collected data. Mean and T-tests were applied in order to impartially evaluate and understand the data.

RESULTS AND DISCUSSION

The Level of Teachers 21st Century Skills as Assessed by Themselves

Table 1. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Critical Thinking

Statement	Mean	Verbal Description
1. I can evaluate information objectively.	4	High
2. I consider counter examples and counter pieces of evidence.	4.4	High
3. I consider alternatives and multiple perspectives.	4.54	Very high
4. I can reflect on vital ideas.	4.46	High
5. I can sort multiple types of data.	4.2	High
6. I examine assumptions.	4.14	High
7. I assess the validity of claims.	4.31	High
8. I display creative, imaginative, and curious ideas.	4.11	High
9. I welcome problem solving.	4.4	High
10. I trust student reasoning and experiences	4.34	High
Overall Mean	4.29	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table reveals that the statement "Teachers consider alternatives and multiple perspectives" attained the highest mean of 4.54, described as "very high." On the other hand, the statement "Teachers can evaluate information objectively" got the lowest mean of 4, described as "high." The overall mean of 4.29 concludes that teachers' 21st-century skills in terms of critical thinking are high.

The results show that teachers continue to value this aspect of the learning process. Prospective instructors should be able to handle issues critically to mentor their students through the teaching-learning process and assist them in developing their problem-solving skills. For example, Sandoval et al.'s (2018) study on teacher development asserted that teacher learning and thinking were highly valuable in promoting students' intellectual processes. It was designed to assess student results and alter the way teachers think and learn.

Additionally, the above analysis can be associated with the assertion of Sabado (2016) that teachers should develop critical thinking skills in order for them to become parallel with the educational standards around the world.

Table 2. Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Creativity

Statement	Mean	Verbal Description
1. I am open to new ideas even if they are initially strange.	4.66	Very high
2. I make sure that my students don't have so much homework that it prevents them from being creative.	4.69	Very high
3. I encourage my students to spend time in fostering their concepts and turning them into something valuable.	4.4	High
4. I suspend judgement until I have all the needed information.	4.63	Very high
5. I believe that there are multiple approaches to do things and to solve problems.	4.63	Very high
6. I engage my students and help them to be more creative in their activities because they have different gifts and abilities.	4.69	Very high
7. I ask the students to generate their own solutions.	4.51	Very high
8. I create assignments and tests that use creative thinking	4.34	High
Overall Mean	4.57	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above presents that the teachers ensure that their students do not have so much homework that it hinders them from being creative. It achieved the highest mean of 4.69, which is classified as very high. However, teachers who create assignments and tests that use creative thinking obtained the lowest mean of 4.34, described as high. The overall mean of 4.57 concludes that the level of teachers' 21st-century skills as assessed by themselves in terms of creativity is very high.

It implies that teachers are highly effective in creating an environment that supports and enhances student creativity. They are particularly adept at balancing homework with creative time and engaging students in activities that recognize their individual strengths.

This finding supports Stauffer's (2022) theory that creativity allows teachers to interpret ideas in new ways, perhaps leading to innovation. Furthermore, because higher education has undergone a dramatic transformation, shifting from a face-to-face, campus-based lecture model to a more student-centered strategy that includes online and hybrid instruction (Khamis, Naseem, Khamis, & Petrucka, 2021; Oweis, Natour, Muhaisen, & Bader, 2022), instructors must investigate, develop, and use creativity to successfully assist learning (Fischer & Tatomir, 2022).

Table 3. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Communication

Statement	Mean	Verbal Description
1. I communicate effectively through phone calls, emails and an in-person meeting.	4.31	High
2. I create an open-door policy allowing students to contact me with any concerns at any time.	4.4	High
3. I give my students the chance to obtain feedback on their work and ask questions.	4.57	Very high
4. I use appropriate gestures to emphasize my words.	4.57	Very high
5. I get down to my student's level and talk quietly about their behavior.	4.23	High
6. I listen carefully to what my students say, build on their ideas and question them.	4.6	Very high
7. I usually give positive feedback that builds my students confidence.	4.46	High
8. I employ modern teaching tools like computers, movies, and internet resources in my instruction.	4.46	High
Overall Mean	4.45	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above implies that the teachers listen carefully to what my students say, build on their ideas, and question them, obtaining the highest mean of 4.6, described as very high. However, the statement "The teachers get down to the student's level and talk quietly about their behavior" obtained the lowest mean of 4.23, described as high. The overall mean of 4.45 concludes that the level of teachers' 21st-century skills as assessed by themselves in terms of communication is high.

It implies that teachers are highly proficient in paying close attention to what their students say, expanding on their concepts, and posing questions. They are well-equipped with strong communication skills, which are essential for effective teaching and fostering a supportive learning environment.

This finding is strengthened by Sinha (2022), who stated that effective communication skills are significant for teachers not only because they are used to interact with their students but also with other colleagues and school staff members. When teachers possess strong communication skills, they can easily handle classroom management and conflict resolution. It is further substantiated by Kareva (n.d.) stating that successful classroom communication is closely related to what the existing literature refers to as "effective teaching," and it is asserted that productive teachers should have a variety of qualities, including strong managerial, organizational, and communication skills. Lastly, this also supports the finding of Alamger et al. (2017) that good communication skills of teachers are the basic need for academic success of students and professional success in life.

Table 4. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Collaboration

Statement	Mean	Verbal Description
1. I support a close alignment between the team's vision and the work being done.	4.4	High
2. I spend time getting to know my students, learning about their interests, and developing a personal connection.	4.46	High
3. I am used to being fully present in my class and seeing the best in them.	4.25	High
4. I celebrate my students' accomplishments.	4.57	Very high
5. I recognize students' contributions.	4.71	Very high
6. I strengthen the climate of trust to establish a safe environment.	4.6	Very high

7. I engage students in shared work.	4.51	Very high
8. I let my students voice their perspectives in order to reach an agreement or make judgments.	4.54	Very high
9. I use dialogues allowing my students to share and actively listen, state beliefs and bear tension of ambiguity.	4.49	High
10. I urge the group to handle disagreements by giving others space, time, tolerance, and support while they process their feelings.	4.54	Very high
Overall Mean	4.51	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above shows that the item, "Teachers who acknowledge students' efforts," had the greatest mean of 4.71, which is considered "very high." On the other hand, teachers who were completely present in their class and saw the best in their pupils received the lowest mean of 4.25. The overall mean of 4.51 concluded that the level of teachers' 21st-century skills as assessed by themselves in terms of collaboration is very high.

Teachers are particularly effective in recognizing and celebrating students' contributions and accomplishments, fostering a positive and encouraging classroom environment. The results prove that teachers demonstrate strong collaborative skills, essential for creating a supportive and cohesive learning environment.

These results may be associated with Darling-Hammond et al.'s (2017) stance that when students are engaged in effective collaborative structures with their teachers, allowing them to learn things with them, positive achievement happens. Furthermore, collaboration among educators has been identified as a critical aspect of inclusive schools (Finkelstein et al., 2019).

Table 5. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Character

Statement	Mean	Verbal Description
1. I am willing to learn and value the contributions that students make in the classroom.	4.86	Very high
2. I show respect and decency to my students.	4.71	Very high
3. I try to comprehend challenging circumstances to relate and address the pain of my students.	4.69	Very high
4. I approach my lessons with a spirit of openness and acceptance.	4.57	Very high
5. I foster a close-knit community among my students to encourage a humanitarian educational experience	4.6	Very high
6. I eagerly and thoroughly listen, taking in all spoken words, body language, and silence.	4.63	Very high
7. I provide students with chances to think, feel, and express themselves.	4.43	High
8. I give everyone in the classroom my whole attention and radiate light.	4.66	Very high
9. I cultivate an environment that upholds tolerance and respect.	4.63	Very high
Overall Mean	4.64	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table demonstrates that teachers willing to learn and value the contributions that students make in the classroom received the highest mean of 4.86, which is classified as extremely high. On the other hand, the teachers provide students with chances to think, feel, and express themselves, obtaining the lowest mean of 4.43. The overall mean of 4.64 concludes that the level of teachers' 21st-century skills as assessed by themselves in terms of character is very high.

These findings underscore the educators' commitment to valuing and incorporating student perspectives into their teaching practices. This suggests a strong foundation in creating a positive classroom environment based on mutual respect and openness to learning.

This analysis is supported by Wirth and Perkins (2013), who revealed that teacher personality has a big contribution to students' behavior in the classroom and has an effect on students' academic performance.

Table 6. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Citizenship

Statement	Mean	Verbal Description
1. I value and respect cultural differences among my students.	4.8	Very high
2. I provide a variety of exercises in the class and talk about the advantages of diversity.	4.54	Very high
3. I give my students the self-assurance they need to advocate for themselves.	4.69	Very high
4. I help my students feel empowered to voice their ideas through creative posters emphasizing respect and dignity.	4.57	Very high
5. I value my students' decisions and encourage them to be responsible for their actions.	4.74	Very high
6. I take advantage of this and urge students to blog about the good things they see in the classroom so they can show off their writing abilities and support one another.	4.26	High
7. I guide my students in coming up with suggestions for sustaining kindness outside of the classroom.	4.63	Very high
8. I come up with original ideas for educating life lessons and cultivating responsible digital learners.	4.66	Very high
9. I employ problem solving skills with real world issues.	4.57	Very high
10. In my affective assessments, I typically include real-world problems that young people and society are confronting.	4.6	Very high
Overall Mean	4.61	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above shows that teachers value and accept cultural differences among their students, with the highest mean of 4.8, classified as extremely high. On the other hand, teachers take advantage and urge students to blog about the good things they see in the classroom so they can show off their writing abilities and support one another. The lowest mean of 4.26, described as high, was obtained. The overall mean of 4.61, described as the level of teachers' 21st-century skills as assessed by themselves in terms of citizenship, is very high.

This result implies that teachers excel at fostering a classroom environment that values cultural differences and promotes responsibility among students. Teachers are excellent in respecting cultural diversity and encouraging students to take ownership of their decisions and actions. However, there are areas identified for potential improvement. For instance, incorporating blogging activities where students can display their writing skills and provide constructive comments to peers received a lower score. Similarly, integrating diverse activities into lessons and discussing the benefits of diversity also received a slightly lower rating compared to the top-ranked aspects. Overall, it suggests a strong commitment to promoting cultural awareness and personal responsibility among students.

This result is related to the idea of CareCheck (2021), which stated that regardless of the class or group of students, there should be a diverse set of educational opportunities, so every teacher must be able to think beyond expectations to meet the needs of each learner, taking into account their unique culture and beliefs. Furthermore, this finding is supported by Göncz's (2017) personality research findings, which show that teachers' personalities are the best starting point when combined with current knowledge of small group management and learning theory features.

Table 7. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by Themselves in Terms of Digital Literacy Skills

Statement	Mean	Verbal Description
1. I can use, access, evaluate and communicate across digital platforms.	4.34	High
2. I prepare lessons with graphic learning like PowerPoint, movies, etc. to make classes more interesting.	4.34	High
3. In the process of teaching and learning, I incorporate pertinent movies and visuals.	4.29	High
4. I show creativity in my presentations to students.	4.29	High
5. I am confident in using application software in teaching.	4.14	High
6. I develop my own videos and use them in teaching.	3.6	High
7. I help students use digital knowledge and explore different platforms appropriately.	4.23	High
8. I make consistent use of digital platforms to improve student-teacher collaboration.	4.06	High
9. I use ICT in the provision of remedial or enrichment support to my students.	4	High
10. I use ICT in assessing my students learning through tests.	4.17	High
Overall Mean	4.15	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above shows that the item "teachers can utilize, access, evaluate, and communicate across digital platforms, as well as design lessons with graphic learning tools such as PowerPoint, videos, and so on to make courses more exciting" has the highest mean of 4.34, which is classified as high. On the other hand, the teachers who develop their own videos and use them in teaching obtain the lowest mean of 3.6, described as high. The overall mean of 4.15 concludes that the level of teachers' 21st-century skills as assessed by themselves in terms of digital literacy skills is high.

It implies that teachers are generally proficient in utilizing digital tools and platforms to enhance their teaching effectiveness and creativity. However, there is room for improvement in areas such as creating their own videos and using ICT for remedial or enrichment purposes. Focusing on professional development in these areas could help teachers further enhance their digital literacy skills, ultimately benefiting their students' learning experiences.

The preceding study may be linked to Avci and Ergun (2019), who argue that teachers must improve their skills in a digitally rich academic setting to be more effective in teaching digital students who are clearly immersed in digital media culture. The result is contrary to Zakharov, Komarova, Baranova, et al. (2022) who conducted a study that looked at Russian teachers' pedagogical and digital competency. According to the findings, general education teachers' ICT proficiency was either average or moderate.

Table 8. The Level of Teachers 21st Century Skills as Assessed by Themselves in terms of Critical Thinking; Creativity; Communication; Collaboration; Character; Citizenship; and Digital Literacy Skills

Teachers	Mean	Verbal Description
Critical thinking	4.29	High
Creativity	4.57	Very high
Communication	4.45	High
Collaboration	4.51	Very high
Character	4.64	Very high
Citizenship	4.61	Very high
Digital Literacy Skills	4.15	High
Overall Mean	4.46	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

Table 8 illustrates that teachers' character skills had the highest mean of 4.64, followed by the citizenship abilities with a mean of 4.61; both are described as very high. Nevertheless, their computer literacy abilities have the lowest mean of 4.15, which is regarded as high, followed by critical thinking skills with a mean of 4.29, which further qualifies as high.

This result is in contrast with a study by Zakharov, Komarova, Baranova, et al. (2022), which examined pedagogic and digital skills and discovered that general education organization teachers had an average to moderate level of digital competency.

The Level of Teachers 21st Century Skills as Assessed by their Learners

Table 9. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Critical Thinking

My Teacher	Mean	Verbal Description
1. Can evaluate information objectively	4.42	High
2. Considers counter examples and counter pieces of evidence.	4.48	High
3. Considers alternatives and multiple perspectives.	4.5	High
4. Can reflect on vital ideas.	4.56	Very high
5. Can sort multiple types of data.	4.48	High
6. Examines assumptions.	4.41	High
7. Assesses the validity of claims.	4.47	High
8. Displays creative, imaginative and curious ideas.	4.61	Very high
9. Welcomes problem solving.	4.61	Very high
10. Trusts students reasoning and experiences	4.62	Very high
Overall Mean	4.52	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table above shows that, as assessed by the students, "teachers who trust their students' reasoning and experiences" obtain the highest mean of 4.62, described as very high. On the other hand, according to the students, "teachers examining assumptions" obtained the lowest mean of 4.41, described as high. The overall mean of 4.52 concludes that the level of teachers' 21st-century skills as evaluated by their learners in terms of critical thinking is very high.

Students regard their teachers as skilled in believing in their ideas and personal experiences, as well as in students' ability to be creative and innovative, and they have a strong expectation for their ideas. Meanwhile, there is space for development in how teachers examine expectations and appropriately assess material. Overall, high scores indicate that teachers possess the critical thinking skills required in 21st-century classrooms.

This result is a challenge to the notion put forward by Norris (2019), who claimed that teachers as well as the learners should possess the critical thinking skills starting from an early phase and throughout life. Twenty-first century education requires critical thinkers who are able to reason and analyze information and find the most appropriate and vital solutions to end the issues and problems.

Table 10. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Creativity

My Teacher	Mean	Verbal Description
1. ..is open to new ideas even if they are initially strange.	4.6	Very high
2. Makes sure that students don't have so much homework that it prevents them from being creative.	4.67	Very high
3. Encourages students to spend time in fostering their concepts and turning them into something valuable.	4.37	High

4. Suspends judgement until have all the needed information.	4.6	Very high
5. Believes that there are multiple approaches to do things and to solve problems.	4.68	Very high
6. Engages students and help them to be more creative in their activities because they have different gifts and abilities.	4.66	Very high
7. Asks the students to generate their own solutions.	4.55	Very high
8. Creates assignments and tests that use creative thinking	4.36	High
Overall Mean	4.56	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table shows that students want professors to believe in more than one technique for accomplishing tasks and explaining challenges, with the highest mean of 4.68, which is assessed as extremely high. They also believe that their teachers create assignments and tests that require creative thinking, with the lowest mean of 4. The overall weighted mean of 4.56 concludes that teachers' creativity is very high.

It means that students regard their professors as very skilled at believing in student ideas and personal experiences and as creative and imaginative. Teachers also have high expectations for the students' ideas. However, there is room for improvement in how teachers examine expectations and appropriately assess material. They also believed that teachers possess the critical thinking skills required in 21st-century classrooms.

This is in line with Liu et al. (2022) who asserts that creativity is crucial for both teaching and learning in the educational setting. It takes creativity on the part of teachers to hold students' attention, keep them engaged, and keep them motivated both within and outside of the classroom. Additionally, learning can be made more realistic, relevant, challenging, and exhilarating through creative teaching.

Table 11. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by their Learners in Terms of Communication

My Teacher	Mean	Verbal Description
1. Communicates effectively through phone calls, emails and an in-person meeting.	4.35	High
2. Creates an open-door policy allowing students to contact with any concerns at any time.	4.36	High
3. Gives students the chance to obtain feedback on their work and ask questions.	4.58	Very high
4. Uses appropriate gestures to emphasize my words.	4.49	High
5. Gets down to student's level and talk quietly about their behaviour.	4.31	High
6. Listens carefully to what students say, build on their ideas and question them.	4.58	Very high
7. Usually gives positive feedback that builds students confidence.	4.58	Very high
8. Employs modern teaching tools like computers, movies, and internet resources in instruction.	4.62	Very high
Overall Mean	4.48	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table suggests that students believe that teachers use modern teaching tools like computers, videos, and internet resources in instruction, with the highest mean of 4.62, described as extremely high. On the contrary, "the teachers get down to students' level and talk quietly about their behavior" got the lowest mean of 4.31, described as high.

It means that teachers are highly effective in the preparation of updated instructional materials for teaching and learning inside the classroom. However, it is evident that there is a need for slight improvement by getting

down to students' level and considering their behavior. Also, teachers must provide more accessible phone calls, emails, and in-person meetings when necessary.

The findings support Sinha's (2022) thesis, which states that children can be understood more effectively if their professors have strong communication skills and devote sufficient time to bonding with them. Teachers' effective communication abilities are vital not only for successful classroom management but also for building strong relationships with the students.

Table 12. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Collaboration

My Teacher	Mean	Verbal Description
1. Supports a close alignment between the team's vision and the work being done.	4.52	Very high
2. Spends time getting to know students, learning about their interests, and developing a personal connection.	4.52	Very high
3. ...is used to being fully present in class and seeing the best in students	4.49	High
4. Celebrates students' accomplishments.	4.39	High
5. Recognizes students' contributions.	4.5	Very high
6. Strengthens the climate of trust to establish a safe environment.	4.51	Very high
7. Engages students in shared work.	4.59	Very high
8. Let students voice their perspectives in order to reach an agreement or make judgments.	4.61	Very high
9. Uses dialogues allowing students to share and actively listen, state beliefs and bear tension of ambiguity.	4.6	Very high
10. Urges the group to handle disagreements by giving others space, time, tolerance, and support while they process their feelings.	4.54	Very high
Overall Mean	4.53	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The results show that the students' assessment indicates that professors are allowing students to share their opinions in order to reach an agreement or make judgments, with the highest mean of 4.61, which is classified as extremely high. On the other hand, the statement "the teacher celebrates with the students' accomplishments" received the lowest average of 4.39. The aggregate mean of 4.53 indicated that instructors' collaboration abilities are really excellent.

It indicates that teachers are practically effective in letting students share their understanding of the concepts, and they are given the freedom to decide on their own. However, teachers must enhance their ability to share their happiness over their students' accomplishments in class and to be totally present with their students while they give their all to participate in learning activities. Overall, they demonstrate excellent collaboration skills essential to the present classroom setting.

The result can be associated with the notion of Schwab (2017), who states that in an inclusive classroom, students prefer teachers who appreciate them working in teams and deciding on their best ideas, as they feel they are supported in achieving their given tasks.

Table 13. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Character

My Teacher	Mean	Verbal Description
1. ...is willing to learn and value the contributions that students make in the classroom.	4.7	Very high
2. Shows respect and decency to students.	4.56	Very high

3. Tries to comprehend challenging circumstances to relate and address the pain of students.	4.69	Very high
4. Approaches lessons with a spirit of openness and acceptance.	4.61	Very high
5. Fosters a close-knit community among students to encourage a humanitarian educational experience	4.6	Very high
6. Eagerly and thoroughly listens, taking in all spoken words, body language, and silence.	4.61	Very high
7. Provide students with chances to think, feel, and express themselves.	4.53	Very high
8. Gives everyone in the classroom whole attention and radiate light.	4.62	Very high
9. Cultivates an environment that upholds tolerance and respect.	4.55	Very high
Overall Mean	4.61	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table displays that as assessed by the students, the item "teachers feel willing to learn and value the contributions that students make in the classroom" obtains the highest mean of 4.7, described as "very high." However, the item teachers offer opportunities for students to feel, reflect, and express themselves, got the lowest mean of 4.53, described as very high. The overall mean of 4.61, described as very high, means that teachers' character skills are evident.

This implies that teachers excel at appreciating students' achievement inside the classroom, and they do their best to let students feel they are understood in their pains. However, the results show that teachers need to improve on encouraging their students to practice freedom in expressing themselves and creating an atmosphere where students become respectful and open-minded. Overall, with an average of 4.61, teachers are perceived to have excellent character skills. This skill is very significant in the method of teaching and learning.

These results corroborate those of Lukman et al. (2021), who found that effective learning occurs when teachers treat students like friends, are able to serve as role models, and are disciplined, fair, and fun. **Table**

Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Citizenship

My Teacher	Mean	Verbal Description
1. Values and respect cultural differences among students.	4.74	Very high
2. Provides a variety of exercises in the class and talk about the advantages of diversity.	4.65	Very high
3. Gives students the self-assurance they need to advocate for themselves.	4.6	Very high
4. Helps students feel empowered to voice their ideas through creative posters emphasizing respect and dignity.	4.6	Very high
5. Values students' decisions and encourage them to be responsible for their actions.	4.68	Very high
6. Urges students to blog about the good things they see in the classroom so they can show off their writing abilities and support one another.	4.41	High
7. Guides students in coming up with suggestions for sustaining kindness outside of the classroom.	4.56	Very high
8. Comes up with original ideas for educating life lessons and cultivating responsible digital learners.	4.58	Very high
9. Employs problem solving skills with real world issues.	4.6	Very high
10. In affective assessments, he/she typically includes real-world problems that young people and society are confronting.	4.62	Very high
Overall Mean	4.61	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The table asserts that according to the students, “teachers value and respect differences among students” had the highest mean of 4.74, described as “very high.” On the contrary, the statement that the teachers motivate students to blog about the good things they see in the classroom so they can show off their writing abilities and support one another and guide students in coming up with suggestions for sustaining kindness outside of the classroom earned the lowest mean of 4.56, described as “very high.”

It emphasizes that teachers excel at fostering the best values so that their students feel respected for their cultural diversities. Also, teachers possess the skill of appreciating students’ decisions and helping them to be responsible for whatever consequences their actions might have. However, there are areas identified for significant improvement in letting students post their positive feedback to their peers and setting an example for developing a spirit of kindness outside the classroom. Overall, teachers have very high citizenship skills as assessed by their students.

This result is amplified in the concept of Berry (2023), who highlights that citizenship plays a vital role in the classroom, for it develops a stronger and tougher commitment to doing good in the world.

Table 15. Mean Distribution on the Level of Teachers 21st Century Skills as Assessed by the Learners in Terms of Digital Literacy Skills

My Teacher	Mean	Verbal Description
1. Can use, access, evaluate and communicate across digital platforms.	4.53	Very high
2. Prepares lessons with graphic learning like PowerPoint, movies, etc. to make classes more interesting.	4.59	Very high
3. In the process of teaching and learning, he/she incorporates pertinent movies and visuals.	4.57	Very high
4. Shows creativity in presentations to students.	4.44	High
5. ...is confident in using application software in teaching.	4.41	High
6. Develops own videos and use them in teaching.	4.06	High
7. Helps students use digital knowledge and explore different platforms appropriately.	4.44	High
8. Makes consistent use of digital platforms to improve student-teacher collaboration.	4.48	High
9. Uses ICT in the provision of remedial or enrichment support to students.	4.4	High
10. Uses ICT in assessing students learning through tests.	4.44	High
Overall Mean	4.44	High

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

The data illustrates that, as rated by the students, teachers planning lessons using graphic learning like PowerPoint, movies, etc. to make classes more entertaining obtained the highest mean of 4.59, described as very high. However, teachers who make their own movies and use them in teaching received the lowest mean of 4.06, which is classified as high. The overall mean of 4.4 proves that teachers’ digital literacy skills are high.

This finding indicates that teachers are designing educational materials employing media with careful attention for the high degree of interest among students. Nevertheless, there are valuable areas for improvement since students expect them to possess skills in preparing their own video presentations and use ICT for remedial and enhancement activities. Overall, teachers are assessed as having quite a bit of proficiency in their digital literacy skills.

Omosekejimi (2018) concluded that ICT and digital literacy skills are the best tools for effective teaching and learning in education. Digitally literate teachers can easily find teaching materials, complement classroom instructional aids, and improve knowledge retention among learners.

Table 16. The Level of Teachers 21st Century Skills as Assessed by their Learners in terms of Critical Thinking; Creativity; Communication; Collaboration; Character; Citizenship; and Digital Literacy Skills

Students	Mean	Verbal Description
Critical thinking	4.52	Very high
Creativity	4.56	Very high
Communication	4.48	High
Collaboration	4.53	Very high
Character	4.61	Very high
Citizenship	4.61	Very high
Digital Literacy Skills	4.44	High
Overall Mean	4.54	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

Table 17 shows that students rated their teachers' character and citizenship abilities as very high (4.61), followed by their creativity skills, which had a mean of 4.56 and were regarded as very high.

The findings coincide with the results of the study conducted by Atmojo et al. (2022), showing that the digital literacy levels of the classroom teachers were in the range of very low to high.

Table 17. The Level of Teachers 21st Century Skills as Assessed by their Learners in terms of Critical Thinking; Creativity; Communication; Collaboration; Character; Citizenship; and Digital Literacy Skills

Students	Mean	Verbal Description
Critical thinking	4.52	Very high
Creativity	4.56	Very high
Communication	4.48	High
Collaboration	4.53	Very high
Character	4.61	Very high
Citizenship	4.61	Very high
Digital Literacy Skills	4.44	High
Overall Mean	4.54	Very high

Scale: 1.0-1.5 Very Low; 1.51-2.5 Low; 2.51-3.5 Moderate; 3.51-4.5 High; 4.51-5.0 Very High

Table 17 demonstrates that students rate instructors' character skills and citizenship (4.61) and creativity (4.56) skills as very high. However, their digital literacy skills obtained the lowest mean of 4.44, described as high, followed by communication skills with a mean of 4.48, interpreted as high.

The findings coincide with the results of the study conducted by Atmojo et al. (2022), showing that the digital literacy levels of the classroom teachers were in the range of very low to high.

On the contrary, Gudmundsdottir and Hatlevik (2018) discovered that teacher educators' digital skills and competencies were frequently reported to be low. As a result, Starkey (2020) proposed that the digital literacies, skills, and capacities are arguably very crucial for teacher educators, who are tasked with preparing students and teachers to operate in 'digitally infused' education systems.

Significant Difference on the Level of 21st Century Skills of Teachers when Assessed by Themselves and by their Learners

Table 18. Significant Difference on the Level of 21st Century Skills of Teachers when Assessed by Themselves and by their Learners

Teachers Vs. Students Assessed	<i>T-computed</i>	<i>P-value</i>	<i>Description</i>
Critical thinking	-4.44	0.002	Significant
Creativity	0.54	0.61	Not Significant
Communication	-1.16	0.28	Not Significant
Collaboration	-0.45	0.66	Not Significant
Character	1.22	0.26	Not Significant
Citizenship	0.08	0.94	Not Significant
Digital Literacy Skills	-8.86	0.0000094	Significant
Overall	-1.5165	0.18016	Not Significant

The table showed how teacher levels of 21st-century skills varied depending on whether they were evaluated by their students or by themselves. The p-value must be less than 0.05 in order for the null hypothesis to be rejected statistically using a t-test.

The table above shows that the p-value for the level of 21st-century abilities of instructors as rated by themselves and their students in terms of critical thinking is 0.002, and the digital literacy skill is 0.0000094, which is less than 0.05. As a result, there is a significant difference in teachers' 21st-century skills as perceived by themselves and their students in terms of critical thinking and digital literacy. However, the results suggest that there is no significant difference in the assessment of teachers' creativity, communication, collaboration, character, and citizenship skills compared to students (p-value > 0.05).

Generally, teachers with 21st-century skills score 0.18016 when evaluated by themselves and their students, which is greater than 0.5. As a result, the researchers can conclude that there is no significant difference in the level of 21st-century skills of teachers as perceived by themselves and their students. Thus, the null hypothesis is accepted.

CONCLUSIONS

1. The level of teachers' 21st-century skills as assessed by themselves in terms of critical thinking, communication skills, and digital literacy skills was high, while creativity, collaboration, character, and citizenship skills were very high.
2. The level of teachers' 21st-century skills as evaluated by the students in terms of communication and digital literacy skills was high, while their critical thinking, creativity, collaboration, character, and citizenship skills were very high.
3. There was no significant difference in the level of 21st-century skills of teachers as assessed by the students and themselves..

RECOMMENDATIONS

1. The teachers' proficiency in critical thinking, communication, and digital literacy skills must be enhanced. Teachers should be engaged in complex problems and systems thinking where they can practice this skill. Attending training and seminars is one of the best solutions. The school administrators may utilize the implementation of academic supervision. The purpose of academic supervision is to assess a teacher's technological proficiency in the classroom in relation to the learning objectives or program to be implemented.
2. Teachers should improve themselves in their communication and digital literacy skills. Seminars like "Developing a Positive Relationship: Enhancing Teachers' Communication Abilities to Engage Students and Parents" may enhance teachers' relationships with their students. Educational institutions may consider implementing and integrating the Training Enhancement Program proposed in this paper,

aiming to prepare their educators to become potentially competent in all aspects of 21st-century skills. A training program is designed to ensure its applicability and relevance to the specific needs of teachers in the 21st-century classroom.

Proposed 21st Century Skills Training Enhancement Program

Introduction

To improve college instructors' critical thinking, communication, and digital literacy, a thorough training enhancement program can be put in place. The goal of this program is to provide educators with the know-how they need to better support students' critical thinking, communication skills, and digital literacy. In the quickly changing world of today, college instructors must possess critical thinking, communication, and digital literacy abilities in order to effectively engage and educate their students. With these abilities, educators can encourage self-directed thinking, support clear communication, and confidently traverse the digital terrain. Educators ought to be trained in digital literacy because digital tools and platforms are used in teaching more and more. Teachers can create a more dynamic and engaging learning environment for students by improving these skills. This training enhancement program is intended for 30 days of implementation.

General Objectives:

1. To give college instructors the critical thinking abilities they need to improve their instruction and encourage participation and learning from their students. The curriculum will emphasize many facets of critical thinking and offer useful tactics that may be used in college classrooms.
2. To impart excellent communication skills to college instructors so they may better engage students, give lectures, lead debates, and give feedback. Teachers may create an engaging and self-motivated learning environment that encourages student involvement and academic success by honing their communication skills.
3. To equip college instructors with the digital literacy abilities they'll need to successfully incorporate technology into their instruction. Enhancing their digital literacy abilities will enable educators to provide captivating and dynamic learning opportunities for learners, promote virtual cooperation, and utilize digital resources for efficient teaching and evaluation.

Areas of Concern	Specific Objectives	Intervention/ Activities	Time Frame/ Number of hours	Evaluation	Success Indicator
CRITICAL THINKING SKILLS Introduction to Critical Thinking	1. Define critical thinking and its significance in education	A combination of interactive seminars, talks, debates in groups, and practical exercises	8 hours	Conduct of post-training assessments to measure teachers' growth in critical thinking skills	Teachers are able to evaluate data, solve issues, come to wise judgments, and foster critical thinking in their students if they work on these skills.
Analytical Thinking Problem-Solving	2. Explore the benefits of enhancing critical thinking skills for teachers and students	Case studies and actual situations to demonstrate the principles of critical thinking	8 hours		
Decision-Making	3. Discuss the role of critical thinking in fostering independent and analytical thinking	Assign teachers to group projects and problem-solving exercises to put newly acquired abilities to use.			
	1. Teach techniques for analyzing complex problems and breaking them down into manageable parts	Offer reading lists, internet resources, and resource materials to support more practice and	16 hours		
	2. Introduce methods for identifying patterns, connections, and relationships within data or information				

	3. Provide practice exercises to enhance analytical thinking skills 1. Introduce effective problem-solving strategies, such as defining problems, generating solutions, and evaluating alternatives 2. Explore different problem-solving models and their application in educational contexts 3. Engage teachers in problem-solving activities relevant to their teaching disciplines 1. Develop ability to make decisions by considering many viewpoints, analyzing the available data, and assessing possible outcomes. 2. Talk about how ethical issues affect how decisions are made. 3. Give educators case studies or scenarios so they may practice making wise decisions.	learning. Promote peer cooperation and experience and idea exchange.	8 hours		
COMMUNICATION SKILLS Verbal Communication Skills	1. Identify the importance of clear and concise verbal communication in the college classroom. 2. Enhance public speaking skills, including voice projection, articulation, and pacing. 3. Develop effective lecture delivery techniques, such as using storytelling, visual aids, and interactive elements. 4. Practice active listening skills to encourage student participation and comprehension. 1. Understand how gestures, facial	Interactive seminars that combine group discussions and activities with an emphasis on theory, methodology, and best practices are very engaging. Role-playing: Using simulated situations, participants can apply recently learned skills and gain real-world experience. Peer Feedback: Promoting a helpful and cooperative learning environment by encouraging participants to give feedback to one another. Guest Speakers:	8 hours 8 hours	Conduct assessments to measure the participants' communication skills after the training program	Enhanced communication skills, resulting in improved engagement, understanding, and academic success among students
Nonverbal Communication Skills					

Written Communication Skills	expressions, and body language affect communication. 2. Gain knowledge of the nonverbal signs that indicate engagement, confidence, and approachability. 3. Recognize and adjust to cultural variations in nonverbal communication. 4. Role-play games to improve your ability to read nonverbal cues.	Asking expert college instructors or specialists in communication techniques to offer their perspectives and experiences. Self-Reflection and Evaluation: Motivating individuals to consider their development and pinpoint areas in which they still need to improve.	8 hours		
Interpersonal Communication Skills	1. Create well-structured, lucid written materials for assignments, feedback, and syllabi. 2. Expand the capacity to give students quick, helpful feedback. 3. Examine appropriate email behavior and formal written communication techniques. 4. Put writing exercises into practice to increase conciseness, coherence, and clarity. 1. Develop a rapport and a good rapport with the kids. 2. Gain empathy and active listening techniques to comprehend the needs and worries of students. 3. Handle challenging discussions and disputes in a positive way. 4. Practice excellent interpersonal communication through role-playing scenarios.		8 hours		
DIGITAL LITERACY SKILLS Introduction to Digital Literacy	1. Recognize the value of digital literacy in the classroom of the twenty-first century. 2. Provide definitions for digital literacy and its essential elements, such	Interactive seminars that emphasize the investigation and practical application of digital tools and resources are known as hands-on	8 hours	Conduct assessments to measure participants' digital literacy skills after the	Enhanced digital literacy skills, enabling them to efficiently

Information Literacy and Research Skills	as media literacy, information literacy, and digital citizenship. 3. Examining the advantages and difficulties of digital literacy in education. 1. Develop skills to assess the trustworthiness and reliability of available sources. 2. Clarify effective research strategies and techniques to students. 3. Introduce digital library resources and databases available for academic research.	workshops. Case Studies and Examples: Presenting actual instances of how digital literacy has been successfully incorporated into instruction. Collaborative Projects: To put their abilities to use and strengthen them, participants are encouraged to collaborate on digital projects.	16 hours	training program.	assimilate technology into their teaching processes and equipped students for the digital age.
Media Literacy and Visual Communication	4. Practice critical thinking skills when analyzing and synthesizing information. 1. Enhance skills to critically evaluate and analyze various forms of media. 2. Consider the impact of visual communication and multimedia in teaching and learning. 3. Explore digital storytelling techniques and multimedia tools for instructional purposes.	Self-paced online learning modules that give learners access to tools, tutorials, and supplementary learning materials. Peer Learning and Support: Encouraging cooperation and the exchange of best practices by facilitating peer learning groups and support networks.	16 hours		
Online Collaboration and Communication	4. Create engaging and visually appealing presentations and learning materials. 1. Examine digital platforms and technologies for online communication and teamwork. 2. Oversee peer reviews, group projects, and online conversations. 3. Teach students netiquette and appropriate online communication techniques. 4. Encourage polite,		16 hours		
Digital Assessment and Feedback					

	inclusive communication online. 1. Make use of digital tools for summative and formative evaluations. 2. Study online polls, quizzes, and assessment tools. 3. Using digital technologies, provide timely and constructive comments. 4. Use assessment data analysis and interpretation to guide instruction.				
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REFERENCES

1. Abdulloh, W., Niemted, W., Chusuwan, R., and Tansakul, J. (2022). A second-order confirmatory factor analysis model of primary school administration promoting 21st century skills. *African Educational Research Journal*, 10(1): 28-37.
2. Alamgir K. , Salahuddin, K, Syed,Z., and Manzoor, K. (2017). Communication skills of a teacher and it role in the development of the students' academic success. *Journal of Education and Practice*, Vol. 8, No. 1, pp. 18-21.
3. Anagün, Ş. S. Atalay, N. Kılıç, Z.,& Yaşar, S. (2016). The development of a 21st century skills and competences scale directed at teaching candidates: validity and reliability study. *Pamukkale University Journal of Education*, 40 (40), 160-175.
4. Atmojo, I.R.W, Ardiansyah, R & Wulandari, W. (2022). Classroom Teacher's Digital Literacy Level based on Instant Digital Competence Assessment (IDCA) Perspective. *Mimbar Sekolah Dasar*, Vol. 9(3), 431-445.
5. Begum, R. & Liton, H. A. (2018). Needs and Demands of 21st Century Learning Skills: A Reflective Approach. Vol.5. Issue 1.
6. Berry, A. (2023). What is citizenship education and why is it important? Retrieved January 25, 2023 from <https://xqsuperschool.org/rethinktogether/what-is-citizenship-education-and-why-is-it-important/>
7. CareCheck (2021). 10 challenges of teaching & how to overcome them. Retrieved from <https://www.carecheck.co.uk/10-challenges-of-teaching/>
8. Darling-Hammond, L., Hyler, M.E., & Gardner, M. (2017). Effective Teacher professional development. Learning Policy Institute.
9. Finkelstein, S., Sharma, U., & Furlonger, B. (2019). The inclusive practices of classroom teachers: A scoping review and thematic analysis. *International Journal of Inclusive Education*, 25(6), 735–762. <https://doi.org/10.1080/13603116.2019.1572232>.
10. Fischer, B. M. C. and Tatomir, A.(2022). A snapshot sample on how COVID-19 impacted and holds up a mirror to European water education, *Geosci. Commun.*, 5, 261–274, <https://doi.org/10.5194/gc-5-261-2022>, 2022.
11. Fullan,M. (2015). 21st Century Skills: 6 Cs of Education. (www. blogawwapp.com) retrieved on July 15, 2018.
12. Göncz, L. (2017). “Teacher personality: A review of psychological research and guidelines for a more comprehensive theory in educational psychology,” *Open Review of Educational Research*, vol. 4, no. 1, pp. 75-95.
13. Hatlevik, O. E., Throndsen, I., Loi, M., & Gudmundsdottir, G. B. (2018). Students' ICT self-efficacy and computer and information literacy: Determinants and relationships. *Computers & Education*, 118, 107– 119. <https://doi.org/10.1016/j.compedu.2017.11.011>

14. Kareva, V. (nd). The Influence of classroom communication on student commitment to the university. *European Scientific Journal*, Vol. 7, No. 26, pp. 90-104, n
15. Khamis, T., Naseem, A., Khamis, A., & Petrucka, P. (2021). The COVID-19 pandemic: a catalyst for creativity and collaboration for online learning and work-based higher education systems and processes. *Journal of Work-Applied Management*, 13(2), 184–196. <https://doi.org/10.1108/jwam-01-2021-0010>.
16. Lukman, J., Marsigit, M., & Istiyono, E. (2021). Effective teachers' personality in strengthening character education. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1299226.pdf>
17. Liu, C. Y., Lin, W. W, and Wu, C. J. (2022). Understanding the properties and processes of a creative teacher team. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.920859/full#B30>
18. Omosekejimi, A. F., Ezewu, S. B., Ezewu, E. G. B., Nwobu, B. K. & Nweke, A. C. (2018). ICT and Digital Literacy Skills: a Mechanism for Efficient Teaching in Nigerian Colleges of Education. *Journal of information and knowledge management*, Vol. 9 (3) Retrieved from <https://dx.doi.org/10.4314/ijikm.v9i3.5> on 25/04/2019.
19. Oweis, T., Al Natour, A., Muhaisen, B., & Bader, S. (2022). The Effect of Covid-19 Pandemic on the Teaching-Learning Process: A Theoretical Overview. *Journal of Higher Education Theory & Practice*, 22(12).
20. Rodrigo, M.R., Bacus, K.M., Cordova, A.J., Medallo, M., Pacturan, L.D., Enero, D.J (2021); Descriptive- Correlational Study on the effects of E-commerce on the Philippine Economic Performance. <https://www.studocu.com/ph/>
21. Sabado, A. (2016). Education in the 21st Century Philippines. Sun. Star. Pampanga. June 19, 2016.
22. Sandoval, W. A., Kwako, A., Modrek, A. S. & Kawasaki, J. (2018). Patterns of Classroom Talk Through Participation in Discourse-Focused Teacher Professional Development. *Proceedings of the 13th International Conference of the Learning Sciences*, 2 (pp. 760-767).
23. Sinha, P. (2022). Why good communication skills are important for teachers. Retrieved July 16, 2022 from <https://classplusapp.com/growth/why-good-communication-skills-are-important-for-teachers/#:~:text=Good%20communication%20skills%20can%20help%20teachers%20to%20better%20understand%20their,communicate%20with%20students%20and%20parents.>
24. Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, 5(1). <https://doi.org/https://doi.org/10.1080/2331186X.2018.1519143>
25. Starkey, L. (2020) 'A Review of Research Exploring Teacher Preparation for the Digital Age', *Cambridge Journal of Education*, 50(1), pp. 37–56
26. Stauffer, B. (2022). What are the 21st century skills? Retrieved January 10, 2022 from <https://www.aeseducation.com/blog/what-are-21st-century-skills>.
27. Wirth, K. R. & Perkins, D. (2013). Learning to learn. www.maclester.edu/academics/geology/.../learning
28. Zakharov, K., Komarova, A., Baranova, T., & Gulk, E. (2022). Information Literacy and Digital Competence of Teachers in the Age of Digital Transformation. *Lecture Notes in Networks and Systems*, 247, 857–868. https://doi.org/10.1007/978-3-030-80946-1_78.