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Readiness of teachers on technology utilization and characteristics of Alpha-Generation learners

Mary Ann S. Bondesit,
Teacher III,
Department of Education-Nalayahan Elementary School
Nalayahan, Siruma, Camarines Sur, Philippines

Abstract: The study examined how teachers' readiness affects the characteristics of Alpha-generation learners in Siruma District, Camarines Sur, for SY 2023–2024. It focused on teachers' readiness in content knowledge, pedagogy, environment, diversity, and assessment, and on learners' traits like hyper-connectivity, independence, and tech adaptability. Using a descriptive-correlational method with 378 respondents, data were gathered via surveys and interviews, and analyzed using statistical tools. The study also aimed to propose a program to improve teacher readiness.

Keywords: Readiness of teachers, technology utilization, alpha-generation learners

Introduction

In the 21st century, the integration of technology in education has become essential, requiring teachers to adapt and develop digital competencies. However, many educators still face barriers such as limited access to technology, insufficient training, and resistance to change. These challenges affect their ability to implement technology-driven instruction, which in turn impacts student engagement and academic performance. At the same time, Alpha-generation learners, born in the digital age, exhibit unique traits like hyper-connectivity, independence, and a strong preference for visual and interactive learning, making traditional teaching methods increasingly ineffective.

Aligned with the United Nations Sustainable Development Goal 4 on Quality Education, there is a global call for inclusive, equitable, and adaptive learning environments. Teachers must evolve alongside their students, especially with the rapid pace of digital transformation in education. In regions with limited resources, such as rural areas, the lack of professional development opportunities exacerbates the digital divide. Addressing this gap is essential to ensure all learners receive instruction suited to their needs and technological realities.

Philippine educational policies further emphasize the importance of teacher readiness in the digital era. Republic Act No. 10533 (Enhanced Basic Education Act of 2013) and DepEd Order No. 21, s. 2019, both advocate for learner-centered and technologically enhanced education. These mandates highlight the need for continuous teacher development to align with 21st-century demands. As Alpha-generation learners grow up in digital-rich environments, these legal frameworks reinforce the necessity of equipping educators with the tools and skills to keep pace with modern learning behaviors.

In the Siruma District of Camarines Sur, teachers face specific challenges in integrating technology due to infrastructural and training limitations. These conditions hinder their ability to cater to Alpha learners, whose educational needs require dynamic and tech-savvy approaches. This study aims to assess the technological readiness of teachers and analyze its relationship with the learning characteristics of Alpha-generation students. The findings will guide the development of targeted professional development programs to improve instructional practices and build a more engaging, relevant, and future-ready educational environment.

Methods and Materials

The study employed a descriptive-correlational method to assess teachers' readiness and its relationship with Alpha Generation learners' characteristics. It described teachers' competencies and learners' digital traits, then examined how teacher preparedness influences these learner behaviors in a technology-driven learning environment.

Population and Sample

A study was conducted in six elementary schools in the Siruma District, Camarines Sur, during the 2023-2024 academic year. The research assessed teacher readiness and Alpha Generation learner characteristics using purposive sampling. The study involved

378 participants, including six school heads, 18 Grade 2 teachers, and 354 Grade 2 learners. School A had the highest number of participants, contributing 28% of teachers and 27% of learners. Schools B and C followed with 23% and 17% of respondents, respectively. Schools D, E, and F had fewer participants, with School F contributing only 7% of the total sample. This sampling strategy allowed for a comprehensive analysis of teacher readiness and learner characteristics in various school settings, providing insights that reflect the broader educational environment in the Siruma District.

Data Collection:

The study followed a systematic process starting with identifying the research problem and developing objectives. After obtaining proposal approval and securing permits, the researcher created and validated a questionnaire through expert review and pilot testing. The finalized survey was administered to participants, and data were collected, processed, and analyzed using statistical methods. The findings were compiled into a thesis, defended before a panel, revised as needed, and finally approved and archived, marking the completion of the researcher's Master's degree.

Results and Discussion

Level of Teachers' Readiness on the Utilization of Technology

Teachers' readiness encompasses their content knowledge, pedagogical strategies, classroom management, and assessment techniques. It is essential for educators to create inclusive learning environments that cater to diverse backgrounds and utilize technology effectively.

Teaching effectiveness hinges on strong content knowledge and pedagogical skills, with technology integration and continuous learning being key. According to Table 2A, the highest-ranked areas are technology use (AWM 3.37) and introducing new knowledge (AWM 3.26), showing teachers' confidence and active method updates. The lowest-ranked area is the use of diverse instructional strategies beyond subject mastery (AWM 3.01), indicating a need for broader approaches to address diverse student needs. These findings support Simon et al. (2021) and Elbaz (2023), who emphasize content mastery, adaptive pedagogy, and collaboration as critical for effective teaching. Enhancing collaboration and instructional diversity, aligned with Universal Design for Learning, can further improve teaching effectiveness for Alpha-generation learners.

Table 2A

Level of teachers' readiness along content knowledge and pedagogy

Statements	A	B	C	AWM	Int	Rank
The teacher integrates technology effectively into their teaching, ensuring that they possess the necessary knowledge and skills for the modern classroom.	3.38	3.44	3.29	3.37	VH	1
The teacher introduces specific knowledge which can significantly alter their teaching approach.	3.28	3.33	3.18	3.26	VH	2
The teacher enhances content knowledge by cultivating epistemic habits and engaging in reflective practice.	3.22	3.28	3.15	3.22	H	3
The teacher shares knowledge among colleagues, such as lesson planning sessions or peer observations, that can foster a collaborative culture and prove invaluable in teaching.	3.18	3.22	3.10	3.17	H	4
The teacher uses diverse instructional strategies beyond subject mastery, including learning to simplify complex concepts, foster critical thinking, and problem-solving skills.	3.01	3.06	2.95	3.01	H	5
Over-all Average Weighted Mean	3.21	3.27	3.13	3.21	H	

Table 2B highlights the very high level of teacher readiness in establishing a supportive learning environment, with an overall Average Weighted Mean (AWM) of 3.54. The highest-ranked item was fostering empathy and understanding among students (AWM 3.74), showing that teachers highly prioritize compassion to enhance student engagement. This is closely followed by patience in managing classroom behavior (AWM 3.69), emphasizing the value placed on maintaining effective communication and discipline. Adaptability and real-world learning both received AWMs of 3.55, indicating teachers' capacity to adjust teaching strategies and connect lessons to real-life contexts. However, the lowest-ranked item was sharing best practices and fostering collaboration (AWM 3.15), suggesting a need to strengthen collaborative efforts and knowledge-sharing among teachers. These findings affirm the research of Simon et al. (2021) and Elbaz (2023), who stress that effective learning environments depend not only on classroom control but also on emotional support, adaptability, and collaborative teaching. Promoting professional learning communities and peer mentoring could further enhance these areas and ensure a more holistic, student-centered learning experience.

Table 2B

Level of teachers' readiness along learning environment

Statements	A	B	C	AWM	Int	Rank
The teacher fosters empathy and understanding among students, thereby enhancing their learning experience and engagement.	3.75	3.80	3.68	3.74	VH	1
The teacher's patience enables effective classroom behavior management, collaboration with diverse colleagues, and communication with students and parents.	3.70	3.75	3.63	3.69	VH	2
The teacher adapts to the ever-evolving environment, adjusting their teaching methods based on student age, resources, and changing curriculum, practices, and requirements.	3.55	3.60	3.50	3.55	VH	3.5
The teacher values real-world learning and incorporates students' experiences into their own education.	3.58	3.60	3.48	3.55	VH	3.5
The teacher shares best practices and knowledge, fostering a collaborative environment where they experiment and discover effective methods for teaching and learning.	3.15	3.20	3.10	3.15	VH	5
Overall Average Weighted Mean	3.55	3.59	3.48	3.54	VH	

Table 2C shows teachers' readiness to accommodate diverse learners, with high levels of readiness for facilitating students from diverse socioeconomic backgrounds and preparing visual teaching materials in culturally diverse classrooms. However, teachers' commitment to inclusive teaching practices and adapting to local contexts is lower. The statement "The teacher gives more specific knowledge and skills to establish real learning environments in which diverse ideas and opinions are valued" received a lower rating, suggesting areas for improvement in embracing diverse viewpoints and adapting teaching methods to specific local contexts. Addressing these areas could strengthen teaching effectiveness and provide equitable learning opportunities for all learners.

Table 2C

Level of teachers' readiness along diversity of learners

Statements	A	B	C	AWM	Int.	Rank
The teacher facilitates students to teach from diverse socioeconomic backgrounds.	3.25	3.28	3.18	3.24	VH	1
The teacher prepares visual teaching in a culturally diverse classroom.	3.18	3.22	3.12	3.17	H	2
The teacher always prepares an effective lesson to cater to different learning styles/methods in the class.	3.12	3.17	3.08	3.12	H	3
The teacher gives more specific knowledge and skills to establish real learning environments in which diverse ideas and opinions are valued.	3.02	3.06	2.95	3.01	H	4
The teacher gave and shares knowledge and skills to adapt teaching-learning for the local context	2.80	2.83	2.75	2.79	H	5
Overall Average Weighted Mean	3.07	3.11	3.02	3.07	H	

Table 2D highlights that teacher show very high readiness in assessment and reporting, with the highest-rated indicator being the use of scoring rubrics and assessment criteria (AWM 3.40), demonstrating strong skills in fair and accurate student evaluation. The lowest-rated item is assessing students' skills and knowledge with cultural and linguistic sensitivity (AWM 2.73), indicating a need for more inclusive assessment practices. These findings align with Rusdin (2018), who emphasizes the importance of using innovative and culturally responsive assessment strategies, particularly in diverse and digitally advanced learning environments.

Table 2D

Level of teachers' readiness along assessment and reporting

Statements	A	B	C	AWM	Int.	Rank
The teacher uses scoring rubrics and assessment criteria to accurately interpret student performance, identify strengths and areas for improvement, grade students fairly, and consider external factors and biases.	3.40	3.44	3.35	3.40	VH	1
1The teacher plans classroom activities that demonstrate learning, such as recap quizzes, concept maps, brainstorming, journal writing, role play, and mathematical problem-solving, to explore critical understandings and foster critical thinking.	3.30	3.33	3.25	3.29	VH	2
The teacher encourages thoughtful dialogue, using open and follow-up questions to encourage students' understanding and provide ample time for reflection.	3.30	3.33	3.22	3.28	VH	3

The teacher uses various methods to assess students' progress, enhancing the reliability, validity, and equity of assessments by incorporating observations, conversations, and portfolios.	3.25	3.28	3.18	3.24	H	4
The teacher assesses students' skills and knowledge, considering cultural and linguistic backgrounds, rather than their literacy skills or task interpretations, to ensure appropriate feedback.	2.75	2.78	2.65	2.73	H	5
Overall Average Weighted Mean	3.20	3.23	3.13	3.19		

Table 2E shows that teachers demonstrate the highest readiness in the Learning Environment domain (3.54), reflecting strong capabilities in fostering empathy, collaboration, and classroom engagement. The findings show that teachers are most effective in creating a supportive learning environment. However, their lowest rating in addressing learner diversity suggests a need for more inclusive teaching strategies. Professional development and mentorship in culturally responsive teaching can improve readiness and promote equity in education.

Table 2E

Summary of level of teachers' readiness

Level of Readiness of Teachers	A	B	C	AWM	Int	Rank
Learning Environment	3.55	3.59	3.48	3.54	VH	1
Content Knowledge and Pedagogy	3.21	3.27	3.13	3.21	H	2
Assessment and Reporting	3.20	3.23	3.13	3.19	H	3
Diversity of Learners	3.07	3.11	3.02	3.07	H	4
Overall Average Weighted Mean	**3.26**	**3.30**	**3.19**	**3.25**		

Level of Characteristics of Alpha-Generation Learners

Alpha-generation learners, shaped by early exposure to technology, exhibit hyper-connectivity, independence, visual orientation, technological adaptability, and diverse thinking.

Table 3A indicates that Alpha Generation learners are highly connected to technology, with the top-rated statement showing they are constantly engaged with digital tools. The lowest-rated item, while still high, highlights a need for better support in managing digital identities. These findings align with Chander and Arora (2021), emphasizing the importance of digital classrooms in preparing students for the digital age.

Table 3A

Level of characteristics of alpha generation learners along hyper-connected

Statements	A	Int.	B	Int	AWM	Int.	Rank
The Alpha-Generation children are permanently connected to new technologies that it becomes a way of life.	3.48	VH	3.50	VH	3.49	VH	1
The Alpha-Generation is strong sense of self-awareness and identity, analyzing the world and understanding its place within it.	3.35	VH	3.36	VH	3.36	VH	2
The Alpha-Generation are exposed to innovations like the iPad, video doorbells, facial recognition, streaming services, and 3D printing, and users of technology, navigation in digital spaces a natural part of their lives.	3.25	VH	3.27	VH	3.26	VH	3
The Alpha-Generation are born into a world of digitalization, proactive, self-directed individuals, independent to manage their digital identities, recognizes individual needs.	3.23	H	3.27	VH	3.25	VH	4
Total Weighted Mean	**3.33**	**VH**	**3.35**	**VH**	**3.34**	**VH**	

Table 3B reveals that Alpha Generation learners are seen as highly independent, with the highest-rated statement—highlighting their proactive, self-directed nature and enhanced cognitive skills through technology—earning a weighted mean of 3.66. This underscores their digital proficiency and autonomy. In contrast, the lowest-rated statement, with a still high score of 3.20, reflects a need to strengthen their ability to use technology for exploring diverse perspectives. These findings are supported by Mattar (2018), who emphasizes the need for technology-integrated teaching, structured digital guidance, and strategies like gamification and inquiry-based learning to foster both independence and inclusivity among Alpha learners.

Table 3B

Level of characteristics of alpha generation learners along independent

Statements	A	Int.	B	Int.	AWM	Int.	Rank
The Alpha-Generation are modern world of technology and digitalization, proactive, self-directed individuals, recognizes potential to enhance visual skills, eye-hand coordination, and multitasking younger generation.	3.65	VH	3.67	VH	3.66	VH	1
The Alpha-Generation doing Video games, once considered mere distractions, are now recognized for their potential to enhance visual skills.	3.52	VH	3.55	VH	3.54	VH	2
The Alpha-Generation vast amount of knowledge to explore various topics, connect globally, and valued to enjoy favorite shows, encourages thoughtful dialogue, to provide ample time for reflection.	3.37	VH	3.39	VH	3.38	VH	3
The Alpha-Generation are proficient in utilizing innovative technologies for learning and exploration, offering a diverse perspective that considers various demographics, tastes, lifestyles, and viewpoints.	3.19	H	3.21	H	3.20	H	4
Overall Average Weighted Mean	**3.43**	**VH**	**3.46**	**VH**	**3.45**	**VH**	

Table 3C highlights the strong visual learning preferences of Alpha Generation learners, emphasizing their reliance on technology and interactive methods. The highest-rated statement, with an average weighted mean of 3.76, underscores the role of video games in enhancing visual skills, eye-hand coordination, and multitasking—indicating that such platforms are not only entertaining but also educational. Conversely, the lowest-rated of 3.39, ties visuals to financial planning and self-expression through gaming. Although ranked lowest, it still reflects a very high level of agreement, suggesting these learners value using visuals for practical and personal development. These findings align with Pomerantz (2019), who advocates for adapting teaching strategies to meet Alpha learners' visual preferences. To optimize engagement and skill application, educators must enhance their use of digital and visual tools while also fostering real-world problem-solving abilities through targeted training and instructional design.

Table 3C

Level of characteristics of alpha generation learners along visual

Statements	A	Int	B	Int	AWM	Int	Rank
The Alpha-Generations spend more on Video games, recognizing the potential to enhance visual skills, eye-hand coordination, and multitasking, making them a primary educational tool for younger generations.	3.75	VH	3.77	VH	3.76	VH	1
The Alpha-Generation, influenced by technology and the widespread use of iPads, prefers learning beyond traditional classrooms, utilizing interactive and visual methods to absorb information.	3.70	VH	3.72	VH	3.71	VH	2
The Alpha-Generation experts in the use of new technologies, which facilitates their digital learning and opens up a wide range of possibilities.	3.63	VH	3.65	VH	3.64	VH	3
The Alpha-Generation emphasizing the importance of investments, savings, and financial planning pursuit financial stable in the future. Visuals are primary focus serving as playground, enhancing hand-eye coordination and to express themselves through video games.	3.38	VH	3.40	VH	3.39	VH	4
Overall Average Weighted Mean	**3.62**	**VH**	**3.64**	**VH**	**3.63**	**VH**	

Table 3D highlights the strong technological capabilities of Alpha Generation learners. The highest-rated statement, with an AWM of 3.86, shows their ability to use technology for inclusive and accessible learning across different socioeconomic backgrounds. The lowest-rated item, with an AWM of 3.47, reflects their readiness for active and challenging tech-based learning—still very high, but slightly lower. These findings align with Herold (2019), who stresses the need for educators to improve their digital teaching strategies to support Alpha learners effectively and bridge the digital divide in education.

Table 3D

Level of characteristics of alpha generation learners along technological

Statements	A	Int.	B	Int.	AWM	Int.	Rank
The Alpha Generations students easy to facilitate teaching learning from diverse socioeconomic backgrounds using technologies.	3.85	VH	3.87	VH	3.86	VH	1
The Alpha-Generation is the first generation to embrace technology, values seamless integration, viewing digital as an intrinsic part of reality, and embraces the internet, smartphones, and on-demand entertainment.	3.64	VH	3.66	VH	3.65	VH	2
The Alpha Generation exposed to innovations like the iPad, video doorbells, facial recognition, streaming services, and 3D printing, making them the most intuitive and natural users of technology, making navigation in digital spaces a natural part of their lives.	3.51	VH	3.53	VH	3.52	VH	3
The Alpha-Generation are proficient in utilizing innovative technologies for learning and exploration, offering a diverse perspective that considers various demographics, and viewpoints. Also ready to an active and challenging different learning using technologies.	3.46	VH	3.48	VH	3.47	VH	4
Overall Average Weighted Mean	**3.62**	**VH**	**3.64**	**VH**	**3.63**	**VH**	

Table 3E highlights the diversity characteristic of Alpha Generation learners as perceived by teachers and learners. The highest-rated statement, with an average weighted mean of 2.70, emphasizes Alpha learners' direct experience with diversity, suggesting a deep, personal understanding of cultural and societal differences. In contrast, the lowest-rated statement, with 2.52, reflects their exposure to diverse cultures—still moderate but slightly lower, indicating a potential area for enhancement. These findings support Kroparo et al. (2020), who emphasize the need for inclusive education and multicultural learning strategies. Educators are encouraged to integrate diverse perspectives through interactive lessons and digital platforms to enrich Alpha learners' global awareness and adaptability.

Table 3E

Level of Characteristics of Alpha Generation Learners along Diversity

Statements	A	Int.	B	Int.	AWM	Int	Rank
The Alpha-Generation experience in diverse environments, not only sees but also experiences diversity, and exposure to various cultures.	2.69	H	2.71	H	2.70	H	1
The Alpha-Generations gives more specific knowledge and skills to establish real learning environments in which diverse ideas and opinions are valued.	2.64	H	2.66	H	2.65	H	2
The Alpha-Generation is a strong sense of self-awareness and identity, analyzing the world and understanding its place within it.	2.60	H	2.61	H	2.61	H	3
The Alpha-Generation grow up in diverse environments, not only sees but also experiences diversity.	2.51	H	2.53	H	2.52	H	4
Average Weighted Mean	**2.61**	**H**	**2.63**	**H**	**2.62**	**H**	

Table 3F highlights the overall characteristics of Alpha Generation learners across five domains: Visual, Technological, Independent, Hyper-connected, and Diversity. The highest-ranking traits—Visual and Technological—each received an Average Weighted Mean of 3.63, indicating that these learners are highly skilled in using visual aids and digital tools in both learning and everyday tasks. The lowest-ranked trait is Diversity, with 2.62, suggesting that while Alpha learners are exposed to diverse environments, there is still room to deepen their engagement with multicultural and inclusive experiences. These results align with Spasova (2022), who emphasized the importance of visual and tech-based strategies in education, and Coe et al. (2014), who advocate for integrating critical thinking and cultural awareness to prepare students for a globally connected world.

Table 3F

Summary of Level of Characteristics of Alpha Generation Learners

Statements	A	Int	B	Int	AWM	Int.	Rank
Visual	3.62	VH	3.64	VH	3.63	VH	1.5
Technological	3.62	VH	3.64	VH	3.63	VH	1.5
Independent	3.43	VH	3.46	VH	3.45	VH	3
Hyper-connected	3.33	VH	3.35	VH	3.34	VH	4
Diversity	2.61	H	2.63	H	2.62	H	5
Average Weighted Mean	**3.32**	**VH**	**3.34**	**VH**	**3.33**	**VH**	

Significant Relationship Between the Level of Teachers' Readiness and the Level of Characteristics of Alpha-Generation Learners

Table 4 presents the statistical relationship between teachers' level of readiness and the characteristics of Alpha-generation learners, identifying both the strongest and weakest associations. The highest correlation is observed between the learning environment and visual learning ($r = 0.872$, $p = 0.00$), indicating that a well-structured, engaging environment significantly enhances visual engagement among Alpha learners. Conversely, the weakest correlation is between content knowledge and pedagogy and technological adaptability ($r = 0.40$, $p = 0.10$), which is not statistically significant. This suggests that while teachers are generally prepared in core content and pedagogy, additional training may be needed to effectively support learners' technological traits. These findings are consistent with Steinberg and Kraft (2016), who emphasize the importance of adaptive teaching, digital fluency, and classroom engagement in addressing the evolving needs of digital-native students. To optimize learning outcomes, the study recommends that schools strengthen teacher development in technology integration and build supportive, visually rich environments tailored to Alpha learners' unique strengths and needs.

Table 4

Test on the significant relationship between the level of teachers' readiness and level of characteristics of Alpha-generation learners

Level of Readiness	Level of Characteristics	r	Int.	p-value	Interpretation
Content knowledge and pedagogy	Hyper-connected	0.516	MC	0.03	Significant
	Independent	0.82	HC	0.00	Significant
	Visual	0.489	MC	0.03	Significant
	Technological	0.40	MC	0.10	Not Significant
	Diversity	0.439	MC	0.07	Not Significant
Learning Environment	Hyperconnected	0.659	MC	0.00	Significant
	Independent	0.747	HC	0.00	Significant
	Visual	0.872	HC	0.00	Significant
	Technological	0.715	HC	0.00	Significant
	Diversity	0.799	HC	0.00	Significant
Diversity of Learners	Hyperconnected	0.671	MC	0.00	Significant
	Independent	0.81	HC	0.00	Significant
	Visual	0.715	HC	0.00	Significant
	Technological	0.649	MC	0.00	Significant
	Diversity	0.633	MC	0.00	Significant
Assessment	Hyper-connected	0.664	MC	0.00	Significant
	Independent	0.781	HC	0.00	Significant
	Visual	0.604	MC	0.01	Significant
	Technological	0.562	MC	0.02	Significant
	Diversity	0.527	MC	0.02	Significant

Significant Influence Between the Level of Teachers' Readiness and the Level of Characteristics of Alpha-Generation Learners

Table 5 shows that the learning environment has the strongest influence on Alpha-generation learners, particularly on visual learners ($r^2 = 0.76$), while content knowledge and pedagogy have the weakest influence on technological learners ($r^2 = 0.16$). This suggests that a well-designed, engaging environment enhances visual learning, while subject expertise alone is insufficient to develop tech skills. As supported by Garcia-Valcarcel & Mena (2021), Siemens (2017), and Goldie (2016), effective teaching in

the digital age requires adaptive methods, technology integration, and ongoing teacher training to meet the evolving needs of Alpha learners.

Table 5

Extent of influence between level of teachers' readiness and level of characteristics of alpha generation learners

Level of Readiness	Level of Characteristics	r	r^2	Int.
Content knowledge and pedagogy	Hyper-connected	0.516	0.27	very weak
	Independent	0.82	0.67	moderate
	Visual	0.489	0.24	very weak
	Technological	0.4	0.16	very weak
	Diversity	0.439	0.19	very weak
Learning Environment	Hyper-connected	0.659	0.43	weak
	Independent	0.747	0.56	moderate
	Visual	0.872	0.76	strong
	Technological	0.715	0.51	moderate
	Diversity	0.799	0.64	moderate
Diversity of Learners	Hyper-connected	0.671	0.45	weak
	Independent	0.81	0.66	moderate
	Visual	0.715	0.51	moderate
	Technological	0.649	0.42	weak
	Diversity	0.633	0.40	weak
Assessment	Hyperconnected	0.664	0.44	weak
	Independent	0.781	0.61	moderate
	Visual	0.604	0.36	weak
	Technological	0.562	0.32	weak
	Diversity	0.527	0.28	weak

Conclusion

The study reveals that teachers are highly prepared in fostering effective pedagogy and creating positive learning environments, which significantly influence Alpha Generation learners—particularly in enhancing their visual learning, technological adaptability, and independence. However, diversity in learning and assessment methods require further improvement to fully support students' needs. Strong correlations were found between the learning environment and learner outcomes, while content knowledge and pedagogy showed moderate to strong associations with traits like independence and hyper-connectivity. Though less emphasized, learner diversity and assessment still showed meaningful links, especially to self-directed learning. Overall, the findings underscore the vital role of teacher readiness in shaping the diverse and digital-oriented characteristics of Alpha learners, emphasizing the need for inclusive, adaptive, and technology-integrated teaching strategies.

Conflicts of interest

The authors declare that they have no conflicts of interest regarding this article.

Ethical approval: The study is a part of MAEd research and is approved by the NCF Ethics Committee.

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