Journal of Education and Learning (EduLearn)
Vol. 19, No. 4, November 2025, pp. 1786~1794
ISSN: 2089-9823 DOI: 10.11591/edulearn.v19i4.22495

School teachers training needs assessment: basis for community extension in a rural high school in the Philippines

Nathalie L. Daminar[1], Charisse D. Galusan[2]
[1]Faculty of Teacher Education, College of Industrial Technology and Teacher Education, Caraga State University Cabadbaran Campus, Cabadbaran City, Philippines
[2]Faculty of Business Administration, College of Business and Accountancy, Caraga State University Cabadbaran Campus, Cabadbaran City, Philippines

Article Info

Article history:

Received Jun 12, 2024
Revised Nov 2, 2024
Accepted Mar 19, 2025

Keywords:

Baseline data
Calamba National High School
Extension program
Rural education
Teaching personnel

ABSTRACT

This research investigates the training needs in Calamba National High School (CNHS) as the basis for the community extension program in rural school settings. The study utilized the descriptive survey approach with survey questionnaires serving as the primary data collection tool to identify the training requirements. Data triangulation through a focus group discussion (FGD) was also done to verify the survey results. Results revealed the top five priority training needs include research writing, light vehicle driving, entrepreneurship, video editing, and visual graphics design. Based on these demands, the study included recommendations for specific training topics, scope, and methods. Addressing these areas provides a targeted approach for professional development programs that can lead to significant improvements in educational outcomes for students in rural communities.

Corresponding Author:

Nathalie L. Daminar
Faculty of Teacher Education, College of Industrial Technology and Teacher Education
Caraga State University Cabadbaran Campus
Cabadbaran City 8605, Philippines
Email: nldaminar@csucc.edu.ph

1. INTRODUCTION

Education is regarded as one of the most effective instruments for progress and economic stability in a nation. The success of education in delivering quality learning and teaching relies on the teachers who play an important role in achieving this goal [1]–[3]. Everything taught in school depends on a teacher's teaching ability [4]. That is why, teachers must possess extensive knowledge and should keep abreast of the updates in their profession [5], [6].

High-level competencies become increasingly in demand in today's knowledge-driven economies [7]. This poses more difficulties to educators given the challenge to change traditional schooling models to adjusted modern-day curriculums [8]. To address these concerns, teachers need to enhance their knowledge and proficiency in areas related to advancements in science and technology [9], [10]. The growing need for expertise in new educational programs, teaching techniques, and technological advancements has made it difficult for teachers to be independent, therefore necessitating in-service training [11], [12].

In the Philippine context, the commission on higher education (CHED) and the department of education (DepEd) are essential to ensuring instructional quality. Higher education institutions are within the purview of CHED, whereas DepEd is in charge of basic education [13]. DepEd and CHED assist teachers in staying up to date with advancements in their disciplines through in-service training. However, the education system faces various challenges in advancing educational quality, particularly in rural areas.

Rural education in the Philippines often struggles with inadequate facilities, insufficient assistance, and limited access to resources [14], [15]. These limitations make it more difficult for teachers to deliver high-quality instruction which then widens the educational gap between urban and rural schools [16]. Additionally, diverse social, cultural, and socioeconomic conditions can be observed in rural areas [14]. Teachers in these environments cater to various student learning needs, with minimal support and chance for professional development. Understanding these particular challenges is crucial in designing effective training and support programs.

Community extension emerges as a strategic approach to enhancing education in rural areas. As one of the institutions under CHED, Caraga State University (CSU) is tasked with providing quality higher education and effective community extension programs [17]. CSU with its satellite campus Caraga State University Cabadbaran City (CSUCC) is one of the universities in the Caraga Region, Philippines. CSUCC in partnership with the DepEd and local government of Barangay Calamba of Cabadbaran City proposed the "CSUCC adopt-a-school extension program" with Calamba National High School (CNHS) as a recipient to address local needs and leverage community resources to support education. CNHS was chosen as the recipient of the extension program because of its high potential, school size, and rural location in Cabadbaran City. For this program to be realized, a training needs assessment (TNA) shall be conducted to identify priority needs.

It is typical for organizations to design and implement training without first doing a needs analysis. These organizations bear the risk of offering training that is insufficient, inappropriate, or both. Determining whether or not training is necessary and what kind of instruction is needed to close the gap is the process of TNA. According to Brown [18], TNA is the process of regularly gathering data to determine current training needs so that training initiatives can be designed appropriately to assist the organization in reaching its goals. This can be done with the use of target surveys, interviews, observations, and secondary data, the objective is to precisely ascertain the current situation [19]. The distinction between the intended and actual conditions may indicate problems or a need for training which is why this process plays a crucial role in the success of a training program [20].

Despite the importance of teacher training and community involvement, there is a notable research gap in the specific training needs of teachers in rural high schools in the Philippines. Hence, the current study aims to conduct a comprehensive assessment of the training needs of teachers in rural areas particularly in CNHS. Specifically, it aimed to determine the demographic profile of the participants to be used as baseline data for the extension program. The findings of the study will serve as a basis for designing a program training fit to address the identified needs of rural teachers. By identifying specific areas for improvement and fostering community collaboration, the study seeks to support teachers' professional growth and improve educational outcomes, especially in rural settings.

2. METHOD

The study was conducted in CNHS located in the rural area of Purok 2 Brgy. Calamba, Cabadbaran City, Philippines. The school is quite far from the city proper which needs ample time to reach. CNHS was selected by the DepEd Cabadbaran City Division to be the recipient of the CSUCC Extension Program because it is the biggest rural school in Cabadbaran City and is one of the most competitive schools in terms of academic and sports contests within the division. CNHS has 31 teaching personnel for both the junior high school (JHS) and senior high school (SHS) however, only 28 are respondents to the survey since some teachers are on leave.

Descriptive survey research design was employed to obtain the research objectives of the study. This research design allows researchers to interpret data from the derived list of top-priority training needs and draw implications supported by previous research findings. The primary research instrument for the study was a survey questionnaire designed by the Research and Development Office of CSUCC to assess the needs of the community as baseline data for the extension program. Furthermore, a focus group discussion (FGD) by triangulation was conducted to gather additional information from the respondents. The FGD helps researchers validate the results of the research survey [21]. The data gathered among the teaching personnel were analyzed using statistical tools mainly Microsoft Excel to obtain the frequency, percentage, and means.

3. RESULTS AND DISCUSSION

3.1. School profile

The demographic profile of CNHS as shown in Table 1 was determined in terms of the sources and type of internet connectivity, and availability of devices for internet access. The majority of the teachers have internet connections at home and have devices that they can use to access the internet. Of these, 69% have fiber-optic internet connectivity which enables them to have strong and stable internet connections. However, teachers who do not have internet connections at home can access the web through the school internet connection. This indicates that the teachers can access diverse learning materials like simulations, research

studies, and interactive activities. This is significant since a reliable internet connection is no longer a luxury for teachers but an essential tool. The availability of digital reference materials improves instruction by offering a variety of resources beyond textbooks, encouraging active learning, and facilitating customized instruction [22], [23]. Recent studies [24], [25] have shown that internet connectivity in rural schools can significantly enhance educational outcomes by providing access to online resources, professional development, and innovative teaching methods.

Table 1. Demographic profile of the school

School profile		Frequency	Percentage (%)
Sources of internet	With internet connection	86	24
	No internet connection	14	4
	Home	86	24
	School	14	4
Device used for internet access	Laptop	86	24
	Desktop	86	24
	Mobile	4	10
	Tablet	2	5
	Others	4	4
Type of internet connectivity	Fiber-optic	69	20
	Mobile data	15	4
	Digital subscriber line (DSL)	8	2
	Others	8	2
Strength and stability of internet connection	Strong and stable	86	24
	Moderate and stable	14	4
	Moderate but unstable	-	0
	Poor but stable	-	0
	Poor and unstable	-	0

3.2. Participants' profile

Participants' profile was determined based on age, sex, employment status, current rank or position, years of service, grade level, and subjects taught as displayed in Table 2. It can be observed that half of the number of the teaching personnel at CNHS is aged 20-30 years old which denotes a large youth population, with over 30% of the population falling under the age of 24. This contributes to the increasing number of young Filipinos pursuing higher education and entering the teaching field. Graduates have a wide range of career options in teaching which makes it an appealing career path for quick growth and promotion. Meanwhile, it is also noticeable that there are a large number of teachers aged between 30 to 40 years old. Teachers in this age group obtained more teaching experience, leading to improved classroom management, subject knowledge, and pedagogical skills. This makes them valuable assets to the education system. The relation between age and length of service is that older teachers tend to have accumulated more years in the profession. This aligns with the natural progression of careers, where individuals stay in their role and gain experience over time as evident since teachers are aged 20s to 40s [26].

In terms of gender, the number of male teachers is now approaching or even exceeding the number of female teachers in certain contexts, like public elementary schools. With increasing awareness of gender equality and breaking down rigid stereotypes, teaching is becoming more acceptable for men. In terms of grade level taught, more than 57% of the total number of JHS teachers remains higher than the SHS. A higher concentration of JHS teachers due to students' population density, school infrastructure availability, and specific subject demands. Lastly, the table also illustrates that there are 21% of English teachers, higher than the number of teachers in other fields. The K-to-12 program emphasizes language development across all levels, particularly with the English language.

3.3. Training needs of participants

3.3.1. Survey results

Table 3 provides the ranked list of training needs for the professional development of rural educators. Topping the list is "research" with 60.71% of the participants. Research writing is a valuable skill for teachers since this will aid in crafting action research and school-based management systems for accreditation which can help the teachers qualify for higher positions. This skill enables teachers to create and utilize reliable research-based instructional materials that are proven to enhance the learning experience of the students [27]. Research skills are also essential in winning various academic contests such as science investigatory projects and research presentations in the annual division SHS expo. These results suggest that the school and teachers have a better possibility of improving. Meijer *et al.* [28], mentioned that teachers who

are interested in research lead them to ask better questions, which impacts the school in general. Real [29] has concluded that some of the areas that teachers have given priority for improvement are research skills and effective writing. Additionally, Cortes [30] claimed that educators have to develop five key competencies when performing action research: data management, technological application, issue conceptualization and resolution planning, responsible use of data-gathering instruments, and research ethics.

Table 2. Profile of participants

Profile variables		Frequency	Percentage (%)
Age	20-30 years old	14	50
	31-40 years old	13	46
	41-50 years old	0	-
	50 above	1	4
Gender	Male	13	46
	Female	7	25
	Preferred not to be identified	8	29
Rank/position	Teacher I	18	64
	Teacher II	5	18
	Teacher III	3	11
	Master teacher I	1	4
	Master teacher II	0	-
	Non-teaching	1	4
Length of service	0-2 years	6	21
	3-5 years	11	39
	6-10 years	9	32
	11-0 years	2	7
	20 years above	6	21
Grade level taught	Grade 7	7	25
	Grade 8	8	29
	Grade 9	4	14
	Grade 10	6	21
	SHS	12	43
Subject taught	English	6	21
	Filipino	5	18
	Science	5	18
	Mathematics	4	14
	Music, arts, physical education and health	4	14
	Technology and livelihood education	4	14
	Araling panlipunan (social studies)	2	7
	Edukasyon sa pagpapakatao (values education)	2	7
	Research	2	7

Table 3. List of priority training needs of participants

Training needs	Frequency	Percentage (%)	Priority rank
Research writing	17	60.71	1st
Video-editing	14	50.00	2nd
Light vehicle driving	14	50.00	
Visual graphics design	12	42.86	3rd
Innovation skill training	10	35.71	4th
Welding	9	32.14	5th
Baking	6	21.43	6th
Electrical wiring	6	21.43	
Pedagogical trainings	6	21.43	
Producing audio-visual materials for lessons	5	17.86	7th
Instructional materials development	5	17.86	
Bookkeeping	5	17.86	
Financial literacy	5	17.86	
Budgeting and spending management	5	17.86	
Beauty care	5	17.86	
Developing google site and google applications	4	14.29	8th
Cookery	3	10.71	9th
Entrepreneurship	2	7.14	10th
Recording and livestreaming	2	7.14	
Online learning essentials	2	7.14	
Data encoding	1	3.57	11th
Dressmaking/tailoring	1	3.57	
Housekeeping	1	3.57	

Following closely are "light vehicle driving" and "video editing" was acknowledged by 50% of the respondents because this skill is critical to master which is why many find this skill uncomfortable to practice [31]. The eminence of this skill reflects the practical demands of the educators who are required to commute, contributing to their overall efficiency and effectiveness. On the other hand, "video editing" in teaching goes beyond simply recording lectures; it opens up opportunities for creativity, personalization, and effective communication. Employing video editing programs enables teachers to design dynamic, interesting, and easy-to-understand lessons for students in a variety of classroom settings [32], [33]. Video editing is one of the information and communication technologies (ICT) skills components. Ai *et al.* [34], mentioned that enhancing teachers' ICT skills can accelerate student learning outcomes.

"Visual graphics design" comes in third on the priority list with 42.86%. This suggests the need for innovative and eye-catching instructional materials in schools. It is becoming more widely acknowledged that the use of multimedia and visual aids in the classroom is an effective teaching strategy [35]. Murty and Rao [36] stated that students retain more information during discussions through visually appealing and engaging lesson presentations.

Teachers must foster an inventive mindset as "innovation skill training" comes in at number four on the priority list. With the limited resources that rural schools have been experiencing, this skill allows teachers to think outside the box in solving problems in the school and community [37]. This skill is valuable given how education is changing throughout time, there is always a need for flexibility in the classroom. Furthermore, 32.14% of respondents cited "welding" as a desirable skill. This skill is pertinent in technical or vocational education, making it the fifth priority training need. Welding is a popular non-academic course in SHS, highlighting its significance in equipping students with various job opportunities after high school. The data indicates that teachers have a wide range of training demands such as research methodology and practical abilities like welding, visual graphics design, light vehicle operation, and innovative skill training. These highlight the diverse responsibilities that teachers play in today's educational environment.

3.3.2. Focus group discussion results

The survey results were triangulated and confirmed qualitatively through a FGD. Upon the conduct of the FGD, the researchers presented the top three emerging priority training from the conducted survey which includes research, automotive, and teaching using digital applications. Meanwhile, during the conversation, the respondents appealed that entrepreneurship training should also be prioritized as they believe that teachers can do more to diversify their income than just rely on their salary as a source of income. These inferences are aligned with the study of Tomas and Tiquia [38], indicating that social skills and financial stability are among the areas that the teachers want to improve based on their current status. The varying results of the survey and FGD happen due to the influence of other respondents on the group [21]. However, Acocella [21] stated that FGD is particularly useful in highlighting unanticipated aspects of social trends since it focuses more on the reference of the groups being studied than on the researchers.

As the dialogue progressed, it was agreed to offer the research writing training as soon as possible to capacitate the teachers in complying with requirements as an institution under DepEd. As institutions embark on the journey of enhancing teachers' capabilities, this prioritized roadmap provides a solid foundation for impactful and sustainable improvements in the educational landscape.

3.4. Recommended training topics, scope, and methods

The top five training needs for CNHS are research writing, light vehicle driving, entrepreneurship, video editing, and visual graphics, as determined from the survey and FGD results. Table 4 was adapted and modified based on the framework established in a study conducted by Bratitsis [39], which emphasizes the importance of contextualizing training programs to meet specific educational and social needs.

The training on conducting research and writing publishable manuscripts is essential to address a critical gap in rural education. Khan and Sarwar [40], highlighted an increasing demand for improved research skills among educators by identifying research methods as an important training requirement for university professors in Pakistan. Implementing a short course on the research process can provide teachers with hands-on experience in conducting both action and basic research within their school and rural community. Additionally, training in writing publishable articles is crucial for ensuring that teachers' research outputs are effectively disseminated and intellectually protected [41]. This training should include structuring a manuscript, adhering to publication standards, and navigating the peer review process. Akbari *et al*. [42] emphasize that organizing findings and publishing in international journals can significantly improve educational outcomes by providing evidence-based insights.

Light vehicle driving training is especially crucial for rural educators due to the long distances and hazardous conditions often encountered in rural areas [43]. Effective training in four-wheel vehicle and motorcycle handling is essential to ensure safe and reliable transportation. Face-to-face short courses are

particularly effective for this purpose, as they provide hands-on practice and direct instruction in driving techniques, road safety, and vehicle maintenance. On the other hand, some studies suggest the advantages of using driving simulators in training because it is less expensive and less hazardous given that the drivers are trained under controlled conditions [44]. However, there is limited evidence of the actual effectiveness of driving simulators.

Table 4. Recommendation of training topics, scope, and methods on the top five priority training needs

Top priority training	Suggested topics	Scope of training	Training method
Research writing	The research process	The fundamental concepts of conducting a research study, arranging the results, and presenting the results will be the main topics of discussion.	Short course (blended/modular)
	Writing publishable manuscript	The techniques and approaches for publishing research articles and review papers in international journal publications are covered in this topic.	Specific training
Light vehicle driving	Four wheels vehicle driving	Participants will learn basic vehicle maintenance, road safety procedures, and driving fundamentals.	Short course (face to face)
	Motorcycle driving		Short course (face to face)
Entrepreneurship	Identifying business opportunities and business planning	The topic deals with identifying viable opportunities, developing business plans, and utilizing local assets to create sustainable income streams alongside their teaching careers.	Specific training
	Financial management	Provide essential knowledge and skills for rural school teachers in the basics of accounting, budgeting, managing cash flow, and sources of financing.	Specific training
Video-editing	Fundamentals of video editing	This training program introduces the fundamentals of video editing, focusing on basic techniques and tools to create engaging educational content.	In house training
Visual graphics design	Graphic designing for teachers	Participants will learn to use graphic design tools and techniques to enhance classroom resources.	In house training

The training on entrepreneurship should focus on identifying business opportunities, business planning, and financial management to provide teachers with tools to create additional income streams and manage their proposed businesses effectively. Through this training, participants will work on developing their business plans with the incorporation of financial management principles. It is also highly suggested to invite experienced entrepreneurs and business experts who are in the teaching profession to guide and mentor the training participants. The hands-on approach ensures that participants can immediately apply their learning to real-world situations, fostering personal and professional growth [45].

Video editing and visual graphics design are increasingly relevant as digital tools become integral to education. Training in video editing fundamentals allows teachers to create engaging educational content, enhancing their ability to deliver interactive and accessible learning materials [32]. Similarly, training in graphic design equips teachers with the skills to create visually appealing educational resources, making learning materials more engaging and effective [36]. Conducting these trainings as in-house sessions provides teachers with direct support and immediate application of their new skills within their teaching contexts. It is also encouraged that the final output for this training is instructional material and video presentations that follow the DepEd curriculum learning competencies that will be utilized by the teachers in the DepEd community. By identifying and prioritizing the top training needs, educational institutions can strategically allocate resources, fostering a targeted and effective approach to professional development.

4. CONCLUSION

The assessment of teachers' training needs in CNHS reveals a multifaceted demand for skill enhancement, which reflects the diverse and evolving responsibilities of educators in rural communities. The top training priorities identified include research writing, light vehicle driving, entrepreneurship, video editing, and visual graphics design. These training programs should be carefully designed and implemented to address problems in rural areas, such as different socioeconomic conditions and limited resources, thereby maximizing their impact on student development. All in all, this research not only provides an overview of the current state of CNHS but also serves as a foundation for strategic planning and targeted interventions in rural school

settings. By addressing the identified training needs, educational institutions can enhance the professional growth of their teachers, contributing to the broader goals of education and community development.

ACKNOWLEDGEMENTS

The authors are grateful to those who played important roles in the completion of this study, such as the Department of Education Cabadbaran City Division, Calamba National High School, the Local Government Unit of Barangay Calamba, Cabadbaran City, and the authors of the various sources cited in the study. The researchers would also like to acknowledge Caraga State University Cabadbaran Campus for the research grant.

FUNDING INFORMATION

The funding for this study was granted by Caraga State University. The funding covered all aspects of the study including the preparation of the research proposal, data collection activities, statistical analysis, and publication expenses. With that, the authors express their sincere gratitude to Caraga State University for their invaluable support in the completion and publication of this research.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Nathalie L. Daminar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Charisse D. Galusan	✓	✓	✓	✓		✓		✓	✓				✓	

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors state that they have no conflicts of interest regarding the publishing of this work. They certify that there were no financial, personal, or professional ties that would have affected the findings or how the data was interpreted. Furthermore, the authors of this work state that they have no competing intellectual, political, ideological, or academic interests.

INFORMED CONSENT

Every participant in this study was adequately informed about the goal and extent of the investigation. Before any data was collected, each participant gave their written informed consent. Confidentiality of all information submitted by participants was carefully safeguarded and utilized purely for academic purposes. All of the participants in this study have given their informed consent.

DATA AVAILABILITY

Due to confidentiality and privacy agreements with the participants, the datasets during the current study are not accessible to the general public. However, upon reasonable request, the corresponding author may provide derived data that supports the study's findings. Data access requests will be evaluated in accordance with participant privacy and ethical approval. The data that support the findings of this study are available from the corresponding author, [NLD], upon reasonable request.

REFERENCES

[1] C. M. Fairbanks *et al.*, "Beyond knowledge: exploring why some teachers are more thoughtfully adaptive than others," *Journal of Teacher Education*, vol. 61, no. 1–2, pp. 161–171, 2010, doi: 10.1177/0022487109347874.

[2] M. M. Beshah and A. H. Anshu, "Evaluating the relationship between training expectations of teachers and the received training: pre-service primary school English teachers in focus," *Social Sciences and Humanities Open*, vol. 9, 2024, doi: 10.1016/j.ssaho.2024.100815.

[3] M. K. Dhaliwal, "Teachers becoming lifelong learners," *The Business & Management Review*, vol. 5, pp. 29–30, 2015.

[4] J. H. Stronge, *Qualities of effective teachers*. Virginia: Ascd, 2018.

[5] B. A. Liwanag, E. C. Padohinog, and N. W. Balsicas, "Training needs assessment on the teachers' functional and research competencies: basis," *Online Submission*, vol. 5, no. 1, pp. 18–26, 2023.

[6] E. Richter, T. Fütterer, A. Eisenkraft, and C. Fischer, "Profiling teachers' motivation for professional development: a nationwide study," *Journal of Teacher Education*, 2024, doi: 10.1177/00224871241247777.

[7] E. N. Esman, J. M. Bual, and D. V. Madrigal, "Twenty-first century teaching skills and job satisfaction of public senior high school teachers in central Philippines," *Asian Journal of Advanced Research and Reports*, vol. 17, no. 7, pp. 46–62, 2023, doi: 10.9734/ajarr/2023/v17i7493.

[8] OECD, "An OECD learning framework 2030," in: *Bast, G., Carayannis, E.G., Campbell, D.F.J. (eds), The Future of Education and Labor. Arts, Research, Innovation and Society*. Springer, Cham, doi: 10.1007/978-3-030-26068-2_3.

[9] E. Leu and A. Price-Rom, "Quality of education and teacher learning: a review of the literature," *Washington, DC: USAID Educational Quality Improvement Project*, vol. 1, p. 28, 2006.

[10] S. Kim, M. Raza, and E. Seidman, "Improving 21st-century teaching skills: the key to effective 21st-century learners," *Research in Comparative and International Education*, vol. 14, no. 1, pp. 99–117, 2019, doi: 10.1177/1745499919829214.

[11] D. Wiliam, "Teacher expertise: why it matters and how to get more of it," *Licensed to create: Ten essays on improving teacher quality*, pp. 27–36, 2014.

[12] G. Czerniawski, A. Guberman, and A. MacPhail, "The professional developmental needs of higher education-based teacher educators: an international comparative needs analysis," *European Journal of Teacher Education*, vol. 40, no. 1, pp. 127–140, 2017, doi: 10.1080/02619768.2016.1246528.

[13] I. N. Generelao, G. Ducanes, K. M. Yee, and C. David, "Teacher education in the Philippines: are we meeting the demand for quality," *Philippine Journal of Public Policy: Interdisciplinary Development Perspectives*, 2022, doi: 10.54096/iene4805.

[14] E. E. Shikalepo, "Challenges facing teaching at rural schools: a review of related literature," *International Journal of Research and Innovation in Social Science*, pp. 2454–6186, 2020.

[15] P. du Plessis and R. Mestry, "Teachers for rural schools–a challenge for South Africa," *South African Journal of Education*, vol. 39, 2019, doi: 10.15700/saje.v39ns1a1774.

[16] D. M. Truscott and S. D. Truscott, "Differing circumstances, shared challenges: finding common ground between urban and rural schools," *Phi Delta Kappan*, vol. 87, no. 2, pp. 123–130, 2005, doi: 10.1177/003172170508700208.

[17] Caraga State University, "About the research and development." 2023, access date: June 9, 2024. [Online]. Available: https://www.carsu.edu.ph/?q=ovprie-pages/about-research-and-development.

[18] J. Brown, "Training needs assessment: a must for developing an effective training program," *Public Personnel Management*, vol. 31, no. 4, pp. 569–578, Dec. 2002, doi: 10.1177/009102600203100412.

[19] O. P. Du Chatelet, S. Bozzolan, and B. Van Meldert, *Training needs analysis manual*. Valletta, 2022.

[20] A. Angurana, *Training needs assessment (TNA) methodologies for elected representative and fucntionaries of Panchayati Raj Institutions (PRIs)*. New Delhi, 2012.

[21] I. Acocella, "The focus groups in social research: advantages and disadvantages," *Quality & Quantity*, vol. 46, no. 4, pp. 1125–1136, Jun. 2012, doi: 10.1007/s11135-011-9600-4.

[22] M. Ally, M. Grimus, and M. Ebner, "Preparing teachers for a mobile world, to improve access to education," *PROSPECTS*, vol. 44, no. 1, pp. 43–59, Mar. 2014, doi: 10.1007/s11125-014-9293-2.

[23] A. Farukuoye, O. Folorunso, and E. Lateef, "Availability and accessibility as determinants of use of electronic reference sources among secondary school teachers in in Ekiti State Nigeria," *UNL Digital Commons*, 2022, doi: 10.32873/unl.dc.oth.013.

[24] V. Arkorful and N. Abaidoo, "The role of e-learning, advantages and disadvantages of its adoption in higher education," *International journal of instructional technology and distance learning*, vol. 12, no. 1, pp. 29–42, 2015.

[25] S. Vatanartiran, "A needs analysis for technology integration plan: challenges and needs of teachers," *Contemporary Educational Technology*, vol. 6, no. 3, pp. 206–220, 2015.

[26] A. Podolsky, T. Kini, and L. Darling-Hammond, "Does teaching experience increase teacher effectiveness? A review of US research," *Journal of Professional Capital and Community*, vol. 4, no. 4, pp. 286–308, 2019, doi: 10.1108/JPCC-12-2018-0032.

[27] G. L. Lagura, "Amplifying the impact of extension programs: empowering teachers in the development of research-based instructional materials," *International Journal of Membrane Science and Technology*, vol. 10, no. 2, pp. 916–936, 2023, doi: 10.15379/ijmst.v10i2.1321.

[28] P. C. Meijer, H. W. Oolbekkink, J. A. Meirink, and D. Lockhorst, "Teacher research in secondary education: effects on teachers' professional and school development, and issues of quality," *International Journal of Educational Research*, vol. 57, pp. 39–50, Jan. 2013, doi: 10.1016/j.ijer.2012.10.005.

[29] D. V. C. Real, "Training needs analysis of the teachers in a university in Cavite, Philippines," *SDCA Asia-Pacific Multidisciplinary Research Journal*, vol. 5, no. 2, pp. 15–21, 2023.

[30] S. T. Cortes, "Needs assessment on action research competencies of teacher-researchers in Surigao del Sur, Philippines," *Journal of Education and Innovation*, vol. 21, no. 4, pp. 1–19, 2019.

[31] M. Koc and N. Bakir, "A needs assessment survey to investigate pre-service teachers' knowledge, experiences and perceptions about preparation to using educational technologies," *Turkish Online Journal of Educational Technology*, vol. 9, no. 1, pp. 13–22, 2010.

[32] D. M. Macapugas Jr., R. C. Dagami, and A. J. B. Anadia-Macapugas, "Assessing the proficiency and factors influencing public high school science teachers' video editing and production skills for enhanced instructional presentations," *International Journal of Research and Innovation in Social Science*, vol. 7, no. 12, pp. 1253–1265, 2024, doi: 10.47772/ijriss.2023.7012093.

[33] J. V. Aliazas, "Educational technology for teaching and learning and grade 7 students' proficiency skills in science and technology," *Educational Technology for Teaching & Learning and Grade*, vol. 7, 2014.

[34] S. Ai, V. Tim, and R. Voeun, "ICT skills needs assessment for technical education teacher in the 11 SEAMEO member countries," *The Online Journal for Technical and Vocational Education and Training in Asia*, no. 20, pp. 1–18, 2023.

[35] F. Ozdamli and H. Ozdal, "Developing an instructional design for the design of infographics and the evaluation of infographic usage in teaching based on teacher and student opinions," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 4, pp. 1197–1219, 2018, doi: 10.29333/ejmste/81868.

[36] B. V. R. Murty and K. N. Rao, "Digital pedagogy–an opportunity or a threat?," in *Proceedings of International Conference on Digital Pedagogies (ICDP) 2019*, 2019, doi: 10.2139/ssrn.3375701.

[37] P. Yanli and L. Junhua, "Research on the innovative teaching concept and strategy of university teachers," *Adult and Higher Education*, vol. 5, no. 19, pp. 105–112, 2023, doi: 10.23977/aduhe.2023.051914.
[38] M. A. Tomas and L. C. Tiquia, "Training needs assessment of college faculty: Its impact on professional development and teaching motivation," *JPAIR Institutional Research*, vol. 18, no. 1, pp. 36–46, 2022, doi: 10.7719/irj.v18i1.826.
[39] T. Bratitsis, "Contextualized educators' training: the case of digital storytelling," in *Research on e-Learning and ICT in Education*, P. Anastasiades and N. Zaranis, Eds. Cham: Springer International Publishing, 2017, pp. 31–43, doi: 10.1007/978-3-319-34127-9_3.
[40] M. N. Khan and M. Sarwar, "Needs assessment of university teachers for professional enhancement," *International Journal of Business and Management*, vol. 6, no. 2, pp. 208–212, 2011, doi: 10.5539/ijbm.v6n2p208.
[41] G. Zangaro and D. Whitehead, "A special message to students and graduates about publishing in a journal," *Journal of Excellence in Nursing and Healthcare Practice*, vol. 1, no. 1, pp. 1–3, 2019, doi: 10.5590/jenhp.2019.1.1.01.
[42] U. F. Akbari, "Training in writing and publication of scientific articles for teachers-primary school teachers," *Teumulong: Journal of Community Service*, vol. 1, no. 2, pp. 74–81, 2023, doi: 10.62568/jocs.v1i2.27.
[43] C. J. Marshall, "Identifying challenges and solutions to mentoring teachers in a rural school district," Augusta University, 2021.
[44] F. Alonso, M. Faus, J. V. Riera, M. Fernandez-Marin, and S. A. Useche, "Effectiveness of driving simulators for drivers' training: A systematic review," *Applied Sciences*, vol. 13, no. 9, 2023, doi: 10.3390/app13095266.
[45] S. F. Tajammal, N. Wajid, and J. Alam, "Inclusion of entrepreneurship education in secondary level curriculum: a study of teachers' perceptions in Pakistan," *Qlantic Journal of Social Sciences*, vol. 5, no. 2, pp. 404–410, 2024, doi: 10.55737/qjss.3974519431.

BIOGRAPHIES OF AUTHORS

Nathalie L. Daminar is a professor in the Faculty of Teacher Education under the College of Industrial Technology and Teacher Education in Caraga State University Cabadbaran Campus, Cabadbaran City, Philippines. She received her bachelor's degree in science in education, major in chemistry, and her master's degree in chemistry from Mindanao State University-Iligan Institute of Technology (MSU-IIT), Iligan City Philippines. She later proceeds with her doctorate in philosophy in science education at San Carlos University, Cebu City, Philippines. Recently, she was elected as the Vice Chairman of the Philippine Association for Teachers and Education in Caraga Region, Mindanao, Philippines. She has written several papers in the areas of science education and social sciences. Her research interests include chemistry, pedagogy, science education, and outcomes-based education. She can be contacted at email: nldaminar@csucc.edu.ph.

Charisse D. Galusan is an instructor in the Faculty of Business Administration, College of Business and Accountancy, Caraga State University Cabadbaran Campus, Cabadbaran City, Philippines. She earned her bachelor's degree in bachelor of arts in economics at Father Saturnino Urios University, Butuan City. She continued her graduate studies for master of arts in economics at Ateneo de Davao University, Davao City. She furthered her studies for a bachelor of science in secondary education in professional education at Northern Mindanao Colleges, Inc. Her doctoral degree (ongoing) for doctor of business administration at Father Saturnino Urios University, Philippines. Her research interests include economics, education, social sciences, business, and innovation. She can be contacted at email: cdgalusan@csucc.edu.ph.