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Parental Involvement and Grade 10 Science Achievement in Modular Distance Learning in a Philippine Public High School

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Abstract

Modular distance learning moved much of the daily work of schooling into Filipino households during the COVID-19 pandemic, and the modality remains the fallback whenever typhoons, floods, or extreme heat suspend classes. This descriptive-correlational study examined the extent of parents' involvement in their children's modular learning and its relationship with Science achievement in a public high school in Iloilo City, Philippines. A researcher-modified 15-item questionnaire (pilot $\alpha = .771$) was administered to 240 parents of Grade 10 learners selected through stratified random sampling, and the responses were matched with the learners' Quarter 2 Science grades for School Year 2022–2023. Parents reported high involvement overall ($M = 3.90$), expressed largely through food, gadgets, and encouragement rather than direct teaching or hired tutoring. Involvement did not differ by parents' age, sex, education, civil status, or employment. Learners' grades averaged 85.00, a very satisfactory level. Involvement and achievement were positively but weakly correlated ($r = .142$, $p = .028$). Grade differences by parents' sex, education, and employment were marginal and did not survive multiple-comparison checks. The findings support structured school–home communication and practical guidance for parents who are unable to teach at home.

Keywords: Parental Involvement, Modular Distance Learning, Science Achievement, Junior High School, Philippines

Introduction

When the COVID-19 pandemic closed Philippine schools in March 2020, the education system had little time to plan how millions of children would continue learning at home. By the opening of School Year 2020–2021, the Department of Education (DepEd) had adopted the Basic Education Learning Continuity Plan, under which printed self-learning modules became the main channel through which most public schools reached their learners (Department of Education, 2020). With many households lacking a dependable internet connection, learners

collected their modules at school, completed them at home, and returned them for checking. The arrangement shifted a considerable share of instructional responsibility to the household, where the adult at home, usually a parent, became tutor, supervisor, and courier at once.

The scale of this shift was considerable. The Philippines kept its schools closed to in-person classes for longer than nearly any other country; a joint survey by UNESCO, UNICEF, and the World Bank identified its full school closure as the longest among the 122 countries covered (UNESCO et al., 2022). Printed modules were also the learning delivery mode most preferred by parents in DepEd's Learner Enrollment and Survey Form, and the modality was adopted by public schools across the country (Dangle & Sumaoang, 2020; Naungayan et al., 2024). The learning costs were severe. By 2022, an estimated 91% of Filipino 10-year-olds could not read and understand a simple, age-appropriate text, a rate more than double the East Asia and Pacific average (World Bank, 2022).

Science learning was fragile even before the pandemic. In the Trends in International Mathematics and Science Study (TIMSS) 2019, Filipino Grade 4 learners posted the lowest average science score among the 58 participating countries (Mullis et al., 2020). In the Programme for International Student Assessment (PISA) 2022, only about 23% of Filipino 15-year-olds reached the baseline proficiency level (Level 2) in science, against 76% across OECD countries (OECD, 2023). The Second Congressional Commission on Education (EDCOM 2) later attributed such outcomes to a fragmented system in which education agencies pursued their own mandates largely in isolation from one another (Second Congressional Commission on Education, 2024). A meta-analysis of 42 studies across 15 countries further showed that pandemic-era learning deficits were largest among children from low socioeconomic backgrounds and were larger in middle-income than in high-income countries (Betthäuser et al., 2023). What households could provide during school closures, then, may have mattered most where resources were thinnest.

The issue has not faded with the return of in-person classes. DepEd Order No. 34, s. 2022 brought public schools back to five days of face-to-face instruction, but it allowed exceptions for schools implementing alternative delivery modes (Department of Education, 2022a). The Philippines also ranked first on the WorldRiskIndex in 2022, 2023, and 2024 as the country most exposed and vulnerable to extreme natural events (Bündnis Entwicklung Hilft & IFHV, 2024). DepEd Order No. 37, s. 2022 and its successor, DepEd Order No. 22, s. 2024, direct schools to shift to modular or other distance learning whenever typhoons, floods, earthquakes, or extreme heat suspend face-to-face classes (Department of Education, 2022b, 2024). In early April 2024 alone, 4,769 schools moved to alternative delivery modes during a spell of extreme heat, affecting nearly 2.5 million learners (Manila Bulletin, 2024). Home-based modular learning has therefore become a recurring feature of Philippine schooling rather than a one-time emergency measure, and parents remain at its center.

Meta-analyses and systematic reviews link parental involvement to better school outcomes, including higher achievement, stronger engagement, improved behavior, and greater motivation (Barger et al., 2019; Boonk et al., 2018; Erdem & Kaya, 2020). The effects tend to be modest, however, and they depend heavily on how involvement is defined and measured. Remote learning sharpens the question, since what parents do, or are unable to do, becomes far more visible once the home serves as the classroom. Evidence from other countries

suggests that many parents wanted to help but did not know how, lacked the time, or could not afford the necessary materials (Azubuike & Aina, 2020; Bhamani et al., 2020; Brossard et al., 2020; Garbe et al., 2020; Panaoura, 2021).

The consequences of uneven parental involvement reach several groups of stakeholders. For learners, the support available at home can decide whether a module becomes a genuine learning experience or simply a completed worksheet. For parents, who in this and similar samples are predominantly mothers, modular learning added instructional duties to existing economic and domestic responsibilities, frequently with financial and emotional costs (Agaton & Cueto, 2021; Cahapay, 2021). For teachers and schools, heavy reliance on home support complicates the reading of grades, given that outputs completed at home may not reflect a learner's own mastery (Cajurao et al., 2023). For DepEd and local government units, evidence on what parents actually do shapes how learning continuity plans, parent orientation programs, and learning resources ought to be designed. At the level of society, persistent gaps in foundational and science learning narrow the pool of skilled workers and scientifically literate citizens that a growing economy requires (World Bank, 2022).

The problem also carries theoretical weight. Established frameworks of parental involvement were developed largely in high-income, school-centered systems, where parents can choose among school-based and home-based forms of participation (Epstein, 2018; Hoover-Dempsey & Sandler, 1997). When nearly all instruction moves into the home and many parents have limited schooling themselves, the forms of involvement open to them, and the academic returns on that involvement, may look quite different (Jabar, 2021; Tan et al., 2020). Modular learning in the Philippines thus offers a setting in which these frameworks can be tested under conditions their authors did not anticipate.

The Philippine evidence remains thin. Parents differ widely in schooling, work, and household circumstances, and learners with better-resourced parents may have fared better under modular learning. Yet most local studies concern elementary pupils, are qualitative or descriptive, or were conducted before the pandemic (Bartolome & Mamat, 2020; Jabar, 2021; Yonson, 2016). Pandemic-era Philippine studies have documented parents' roles as supervisors and home tutors, but these are largely qualitative (Agaton & Cueto, 2021; Cahapay, 2021). Recent quantitative studies have begun to fill this gap, with mixed results. Malabarbas et al. (2022) reported a weak positive correlation between parents' involvement and the academic performance of Grade 6 pupils, along with differences by parents' educational attainment and income, whereas Naungayan et al. (2024) found no significant overall relationship among working parents of junior high school learners, with only coaching and task monitoring linked to achievement. Studies of secondary learners that relate parental involvement to a specific subject grade are still scarce.

The present study addresses this gap in one public high school in Iloilo City. Its findings remain relevant now that schools have returned to face-to-face and blended classes, since the same questions resurface whenever learning must continue at home: what parents actually do, which parents need additional support, and whether their involvement shows up in learners' performance. Specifically, the study sought answers to the following questions:

1. How involved were Grade 10 parents in their children's modular distance learning, overall and in specific practices?

2. What was the level of the learners' achievement in Science?
3. Did parents' involvement differ by age, sex, highest educational attainment, civil status, or employment status?
4. Did learners' achievement differ by the same parent characteristics?
5. Was parents' involvement significantly related to learners' achievement?

Given that prior findings on parent characteristics are mixed, three null hypotheses were tested at the .05 level of significance. H01: There are no significant differences in parental involvement across the five parent characteristics. H02: There are no significant differences in learners' achievement across the same characteristics. H03: There is no significant relationship between parental involvement and learners' achievement.

Literature Review

Parental Involvement

Parental involvement is not a single behavior. Epstein (2018) distinguishes several types, among them parenting, communicating with the school, volunteering, supporting learning at home, decision making, and collaborating with the community. Her theory of overlapping spheres of influence holds that schools, families, and communities share responsibility for children's learning, and that the balance among these spheres shifts with circumstances. Several of these types take place in the school building. Under modular learning, nearly all visible academic support moved into the home, and the school contact that remained ran through module distribution, parent–teacher conferences, and occasional messages to teachers. Later work stresses that the quality of involvement matters as much as its amount: involvement tends to benefit children when it is autonomy supportive and emotionally positive, but it can carry costs when it is controlling or pressured, as often happens around homework (Grolnick & Pomerantz, 2022).

Parents' decisions to become involved rest on more than goodwill. Hoover-Dempsey and Sandler (1995, 1997) proposed that these decisions are shaped by how parents construe their role, how confident they feel in helping their children learn (self-efficacy), and whether the school and the child invite their participation. The framework is particularly useful for modular learning, where the reason parents most often gave for not helping was that they were not teachers (Azubuike & Aina, 2020). In this study, parental involvement refers to the practices parents carried out to support a child's modular learning at home and in contact with the school.

Involvement and Achievement

Recent syntheses generally report a positive but small association between parental involvement and achievement. Barger et al. (2019), pooling 448 independent studies covering more than 480,000 families, found small positive correlations (r = .13 to .23) between parents' involvement and children's achievement, engagement, and motivation; the main exception was homework assistance, which was negatively associated with achievement (r = −.15). Erdem and Kaya (2020), analyzing 55 studies published between 2010 and 2019, likewise found a positive but small effect, with parental expectations showing the strongest effect and parental control a small negative one; the size of the effect also differed with the developmental level of the country. In a systematic review, Boonk et al. (2018) concluded that involvement is related to achievement, though less strongly than is commonly believed.

Individual studies are less consistent. Thomas et al. (2020) found that parental involvement was related to middle school students' achievement and well-being, but the effects were small and were outweighed by socio-demographic variables. In that sample of more than 5,000 Grade 7 students and their parents, parents also reported more involvement than their children did, a caution against relying on parent self-report alone. Smokoska (2020), surveying 41 middle school students and their parents, reported only two significant correlations between specific involvement behaviors and achievement. Taken together, these studies point to a real but modest association and to the need to examine parents' circumstances alongside their behavior.

Involvement and Socioeconomic Context

The returns on involvement also appear to depend on who the parents are. In a meta-analysis of 98 studies, Tan et al. (2020) found that several forms of home-based involvement, including learning support at home and parent-teacher communication, were more strongly associated with achievement among students whose parents were more highly educated. The finding suggests that the same behavior may yield different benefits depending on the knowledge and resources a parent brings to it. Field experiments point in a related direction: low-cost text messages and phone calls that gave parents timely information or simple guidance improved attendance, course completion, and learning in both high-income and low-income settings (Angrist et al., 2022; Bergman & Chan, 2021). Involvement, in other words, is not fixed; schools can strengthen it by equipping parents to act.

Involvement during COVID-19 and Modular Learning

Parents' experiences of home learning during the pandemic were demanding. Bhamani et al. (2020) described caregivers who adapted quickly, helped by the free online resources that became available, but who felt stretched by their new role. In the United States, Garbe et al. (2020) found that parents generally agreed with school closures yet struggled to balance their responsibilities, keep their children motivated, access needed resources, and secure good learning outcomes. In an online poll in Nigeria, about 83% of parents reported actively helping their children learn, and those who did not help mostly cited not knowing how, being too busy, or being unable to afford it (Azubuike & Aina, 2020). Panaoura (2021) found that parents of mathematics learners, particularly in elementary school, were willing to help but needed training to build their knowledge and confidence. More broadly, Brossard et al. (2020) noted that school closures placed a disproportionate share of the responsibility for learning on parents, especially in poorer countries.

Philippine Studies

Philippine studies indicate that involvement may take distinct forms in local contexts. Jabar (2021) found that, among economically stretched families, earning a living and providing food were regarded as ways of supporting children's education even when unrelated to schoolwork, and recommended that quantitative studies treat such indirect strategies as separate indicators. Bartolome and Mamat (2020) identified themes of home–school interaction, collective participation in school, structured support at home, and capacity building among stakeholders in early childhood education. Yonson (2016) reported that parents were highly involved in academics, extracurricular activities, and parent–teacher association work at both elementary and secondary levels, with no significant difference between the two.

During the pandemic, Agaton and Cueto (2021) found that Filipino parents served as learning supervisors, tutors, and home-schooling teachers for modular learning, and that they reported difficulties with delivering instruction, unsatisfactory learning outcomes, financial strain, and access to technology. Cahapay (2021), interviewing 12 mothers in Mindanao, described parental involvement in remote learning as a period of many changes that drew parents physically and emotionally closer to their children while also bringing multifaceted difficulties. Teachers likewise named parents' incapacity to help, along with problems in assessment and outputs, among the challenges of printed modular learning (Talimodao & Madrigal, 2021). At the secondary level, Olivar and Naparan (2023) found high parental involvement and a positive correlation between involvement and academic performance among parents of 49 Grade 12 students in online learning. Naungayan et al. (2024), in contrast, found that the overall involvement of working parents in junior high school modular learning was not significantly related to achievement, and that gadget distractions, unstable internet connections, limited references at home, and unclear module instructions were the most serious problems parents encountered.

The Present Study

The studies reviewed leave three questions open for secondary-level science modular learning in the Philippines: what parents actually did, whether this varied with who the parent was, and whether it was related to a subject grade. The present study examined these questions using Epstein's (2018) broad view of involvement and Hoover-Dempsey and Sandler's (1997) emphasis on parents' confidence and invitations to participate. Parent characteristics served as background variables, while involvement and achievement were the two outcomes whose association was tested. No causal relationship between involvement and achievement was assumed.

Methodology

Research Design

The study employed a descriptive-correlational design (Creswell & Creswell, 2018). The design suited the aims of the study, which were to describe parents' involvement and learners' performance and to estimate the strength of their association without manipulating any variable.

Participants and Sampling

The participants were parents of Grade 10 learners enrolled in modular distance learning at Mandurriao National High School, Schools Division of Iloilo City, in School Year 2022–2023. The school had 631 Grade 10 learners in 15 sections. A total of 240 parents were selected through stratified random sampling, with each section serving as a stratum and approximately 38% of each section sampled (from 11 respondents in the smallest section to 21 in the largest). The sample size was guided by Slovin's formula at a 5% margin of error. Within each section, respondents were drawn by simple random sampling from the class list, using a random number table.

Most respondents were mothers (87.9%), high school graduates (53.8%), married (78.8%), and not employed (76.3%). The full profile appears in Table 1.

Table 1
Profile of the Respondents (N = 240)

Characteristic	Category	n	%
Age	Younger (43 years and below)	109	45.4
	Older (44 years and above)	131	54.6
Sex	Male	29	12.1
	Female	211	87.9
Highest educational attainment	Elementary graduate	20	8.3
	High school graduate	129	53.8
	College graduate	74	30.8
	Postgraduate	17	7.1
Civil status	Solo parent	21	8.75
	Married	189	78.75
	Separated	15	6.25
	Widowed	15	6.25
Employment status	Not employed	183	76.25
	Employed	57	23.75

Instrument

Data were gathered with a researcher-modified questionnaire adapted from Kikas et al. (2011), who assessed Estonian mothers' involvement in their children's education. The instrument had three parts. Part 1 collected the parent's age group, sex, highest educational attainment, civil status, and employment status. Age was grouped into younger (43 years and below) and older (44 years and above), with the sample's median age as the cut-off point. Part 2 listed 15 statements describing what parents did to support modular learning, such as checking worksheets, picking up and delivering modules, providing learning resources, and attending parent–teacher conferences. Parents rated each statement on a five-point scale (5 = always, 4 = often, 3 = sometimes, 2 = rarely, 1 = never). Mean scores were interpreted as very high (4.21–5.00), high (3.41–4.20), moderate (2.61–3.40), low (1.81–2.60), or very low (1.00–1.80).

Part 3 recorded each learner's Quarter 2 Science grade for School Year 2022–2023. The grades were obtained from the Grade 10 Science teachers' class records with the permission of the school head, and each grade was matched to the corresponding parent's questionnaire through a coded identification number to protect anonymity. Grades were interpreted following DepEd Order No. 8, s. 2015: outstanding (90–100), very satisfactory (85–89), satisfactory (80–84), fairly satisfactory (75–79), and did not meet expectations (below 75) (Department of Education, 2015).

Validity and Reliability

A panel of five experts, composed of two master teachers, one education program supervisor, one school head, and one research specialist, reviewed the questionnaire. Each expert rated the items for clarity, relevance, and suitability to the respondents and judged each item as appropriate, in need of revision, or not appropriate. The resulting content validity index was

.87, indicating good content validity, and the panel's suggestions were incorporated before pilot testing. The revised questionnaire was then pilot-tested with 30 parents from another public school in the division, who were excluded from the final sample. The Cronbach's alpha of .771 is acceptable by conventional benchmarks.

Data Collection and Ethical Considerations

Permission and ethics approval to conduct the study was obtained from the Graduate School of Guimaras State University and from the Schools Division of Iloilo City. Respondents were informed of the purpose of the study, gave informed consent before answering, and were assured that their responses would remain anonymous and confidential. Questionnaires were distributed and retrieved during the school's regular parent–teacher meeting, and incomplete questionnaires were excluded from the analysis. All data were handled in compliance with the Data Privacy Act of 2012 (Republic Act No. 10173).

Data Analysis

Data were analyzed using SPSS Version 30 at the .05 level of significance. Frequencies and percentages described the respondent profile, and means and standard deviations described involvement and achievement. Independent-samples t tests compared two groups (age, sex, and employment status), and one-way analysis of variance (ANOVA) compared four groups (education and civil status). Given the unequal group sizes for sex and employment, Welch's t is also reported for those comparisons. For the ANOVAs, η^2 is reported as an effect size, and differences among education groups were examined with Tukey's honestly significant difference (HSD) test, calculated from the reported group means, group sizes, and error term (MSE = 35.995, df = 236). Cohen's (1988) benchmarks guided the interpretation of effect sizes. Pearson's r was used to test the relationship between involvement and achievement. With several tests run on the same data, nominally significant results were also compared against a Bonferroni-adjusted threshold.

Results

Parents' Involvement

Parents' involvement in modular distance learning was high overall (M = 3.90, SD = 0.58), although the pattern behind this average was uneven (Table 2). Six practices fell within the very high range. Parents were most involved in providing proper nutrition (M = 4.67) and encouraging their children to learn independently (M = 4.65), followed by providing an Android phone for looking up lessons (M = 4.48), delivering and picking up modules (M = 4.32), supplying learning resources (M = 4.25), and attending parent–teacher conferences (M = 4.24).

Practices that required parents to teach received lower ratings. Helping with outputs (M = 3.58) and hands-on performance tasks (M = 3.70) were still rated high, but tutoring a child who could not cope with a lesson was rated only moderate (M = 3.32). Hiring a tutor was by far the lowest (M = 1.53) and was interpreted as very low. Parents were thus generous with food, gadgets, and encouragement but less able to provide direct instruction.

Table 2
Level of Parents' Involvement in Modular Distance Learning (N = 240)

Parents' involvement	M	SD	Interpretation
Provide their child with proper nutrition	4.67	0.73	Very high
Encourage their child to be an independent learner	4.65	0.70	Very high
Provide an Android phone for looking up lessons	4.48	0.96	Very high
Pick up and deliver the child's modules and answer sheets	4.32	1.14	Very high
Provide the learning resources needed for the worksheets	4.25	0.98	Very high
Attend parent–teacher conferences to follow the child's progress	4.24	1.05	Very high
See to it that all outputs are completed	4.10	0.94	High
Communicate with teachers about the child's performance	4.02	1.12	High
Check the child's worksheets once done	3.98	1.05	High
Help the child manage time	3.91	1.09	High
Spend time working with the child on studies	3.77	1.03	High
Help with hands-on performance tasks in all subjects	3.70	1.21	High
Help the child with outputs	3.58	1.14	High
Volunteer to tutor when the child cannot cope	3.32	1.29	Moderate
Hire a tutor	1.53	0.99	Very low
Overall involvement	**3.90**	**0.58**	**High**

Scale: 4.21–5.00 = very high; 3.41–4.20 = high; 2.61–3.40 = moderate; 1.81–2.60 = low; 1.00–1.80 = very low.

Learners' Achievement

Learners' Quarter 2 Science grades averaged 85.00 (SD = 6.06), a very satisfactory level. About 56% of learners earned grades of 85 or higher, and none fell below 75 (Table 3).

Table 3
Distribution of Learners' Science Achievement (N = 240)

Achievement level	Grade range	n	%
Outstanding	90–100	64	26.7
Very satisfactory	85–89	70	29.2
Satisfactory	80–84	52	21.7
Fairly satisfactory	75–79	54	22.5
Did not meet expectations	Below 75	0	0.0

Overall M = 85.00, SD = 6.06 (very satisfactory).

Involvement by Parent Characteristics

Parents' involvement was high in every group, and no comparison approached significance (Table 4). Younger and older parents had identical means (3.90), as did, in effect, male (3.91)

and female (3.90) parents. Involvement rose slightly with education, from 3.79 among elementary graduates to 4.13 among postgraduates, but the differences were not significant, $F(3, 236) = 1.73$, $p = .161$. Neither civil status, $F(3, 236) = 0.88$, $p = .454$, nor employment status, $t(238) = 1.18$, $p = .238$, made a significant difference. H01 was therefore retained for all five characteristics.

Table 4
Parents' Involvement by Parent Characteristics

Characteristic	Group	n	M	Test	p	Effect size
Age	Younger	109	3.90	$t(238) = -0.04$	.967	
	Older	131	3.90			
Sex	Male	29	3.91	$t(238) = 0.09$	.928	
	Female	211	3.90			
Education	Elementary	20	3.79	$F(3, 236) = 1.73$	.161	$\eta^2 = .022$
	High school	129	3.85			
	College	74	3.96			
	Postgraduate	17	4.13			
Civil status	Solo parent	21	3.88	$F(3, 236) = 0.88$	.454	$\eta^2 = .011$
	Married	189	3.93			
	Separated	15	3.70			
	Widowed	15	3.80			
Employment	Not employed	183	3.93	$t(238) = 1.18$	.238	
	Employed	57	3.82			

No difference is significant at the .05 level. Means are on the five-point scale, and all groups fall within the high range.

Achievement by Parent Characteristics

Achievement showed a different pattern (Table 5). Learners' grades did not differ by parents' age or civil status, but three comparisons yielded p values below .05.

Learners of male respondents scored higher ($M = 87.45$) than learners of female respondents ($M = 84.67$), $t(238) = 2.34$, $p = .020$, a difference of 2.8 points ($d = 0.46$). Only 29 respondents were male, however. The difference remained significant under Welch's test, which does not assume equal variances, $t(34.4) = 2.15$, $p = .039$. Learners of employed parents also scored higher ($M = 86.39$) than learners of parents who were not employed ($M = 84.57$), $t(238) = 1.98$, $p = .049$; Welch $t(96.0) = 2.02$, $p = .046$; $d = 0.30$.

Education was the third. Mean grades rose from 81.70 among learners whose parents had finished only elementary school to 86.82 among those with postgraduate parents, $F(3, 236) = 2.67$, $p = .048$, $\eta^2 = .033$. The post hoc test, however, found no pair of education groups that differed significantly. The widest gap, between the elementary and postgraduate groups (5.1 points), fell exactly at the threshold ($p = .050$), and these two groups had only 20 and 17 members, respectively.

With five comparisons made on achievement, a Bonferroni-adjusted threshold would be .01, and none of the three p values (.020, .048, and .049) meets it. H02 was therefore rejected for sex, education, and employment under the .05 criterion and retained for age and civil status, with the caveat that the three significant results are exploratory.

Table 5
Learners' Science Achievement by Parent Characteristics

Characteristic	Group	n	M	SD	Test	p	Effect size
Age	Younger	109	85.04	5.79	t(238) = 0.08	.940	d = 0.01
	Older	131	84.98	6.30			
Sex	Male	29	87.45	6.63	t(238) = 2.34	.020	d = 0.46
	Female	211	84.67	5.92	Welch t(34.4) = 2.15	.039	
Education	Elementary	20	81.70	5.66	F(3, 236) = 2.67	.048	η^2 = .033
	High school	129	85.03	6.09			
	College	74	85.43	6.00			
	Postgraduate	17	86.82	5.63			
Civil status	Solo parent	21	83.29	6.29	F(3, 236) = 1.26	.291	η^2 = .016
	Married	189	85.39	6.07			
	Separated	15	83.40	4.67			
	Widowed	15	84.20	6.71			
Employment	Not employed	183	84.57	6.07	t(238) = 1.98	.049	d = 0.30
	Employed	57	86.39	5.88	Welch t(96.0) = 2.02	.046	

Student's t is reported on the first line of each two-group comparison and Welch's t on the second. Tukey's HSD (computed from summary statistics) found no significant pair among the education groups. The Bonferroni-adjusted threshold for five comparisons is .01.

Involvement and Achievement

Parents' involvement and learners' Science achievement were positively correlated, r(238) = .142, p = .028, 95% CI [.02, .26]. Learners whose parents reported greater involvement tended to have somewhat higher grades. Involvement, however, accounted for only about 2% of the variation in grades (r^2 = .020). H03 was therefore rejected, although the association is small.

Discussion

Parents were highly involved in their children's modular learning, but not in every respect. They were most involved in practices that sustain a learner, such as meals, a phone, materials, delivering modules, and encouragement, and least involved in those that require teaching. Hiring a tutor was rare (M = 1.53), and personally tutoring a struggling child was only moderate (M = 3.32). This pattern is consistent with Azubuike and Aina (2020), in whose poll many parents did not help since they did not know how, and with Panaoura's (2021) finding that parents were willing to help but needed training. Agaton and Cueto (2021) reported the same strain among Filipino parents of modular learners, and teachers have named parents' incapacity to help as a recurring challenge of printed modules (Talimodao & Madrigal, 2021). The pattern also fits Jabar's (2021) observation that Filipino parents often express

involvement through provision rather than instruction. Viewed through Hoover-Dempsey and Sandler's (1997) framework, it reflects low confidence in the teaching role rather than low commitment. The high attendance at parent–teacher conferences (M = 4.24) suggests that parents respond when the school invites them to take part.

The emphasis on provision over instruction is not necessarily a weakness. On average, direct homework assistance has been negatively associated with achievement (Barger et al., 2019), and involvement helps most when it supports a child's autonomy rather than pressuring the child or taking over the work (Grolnick & Pomerantz, 2022). Encouraging independent learning, which parents in this study rated very highly (M = 4.65), is consistent with this kind of support. The practical question for schools may be less how to make parents teach and more how to help them support learning without doing it for their children.

No differences in involvement were found by age, sex, education, civil status, or employment. Yonson's (2016) pre-pandemic study similarly found comparable involvement across school levels, although it compared elementary and secondary parents rather than parent characteristics. The result departs from Malabarbas et al. (2022), who observed differences in involvement by parents' educational attainment among Grade 6 pupils, a contrast that may reflect the greater independence expected of secondary learners. Several explanations are plausible. The most common practices, such as providing food, a phone, and encouragement, lie within reach of most families, which narrows differences between groups. All respondents also belonged to the same school community and the same modular system. Self-reported involvement may be inflated by social desirability, as most mean scores fell in the high or very high range; parents have been found to report more involvement than their own children perceive (Thomas et al., 2020). Finally, some subgroups were small, with only 29 male parents and 15 each of separated and widowed parents.

Learners' Science grades were mostly satisfactory or better, and none fell below 75. In modular learning, grades often depend on submitted outputs, and the extent to which those outputs reflect learners' own work cannot be determined without a face-to-face comparison group. Junior high school science teachers in modular settings have described assessment results as unreliable (Cajurao et al., 2023), and in a survey of secondary learners, more than 64% reported asking their parents for help with their modules (Areola et al., 2022). If some outputs carried the work of parents or others, grades would be pushed upward and compressed into a narrower band, which would in turn weaken any correlation with involvement. The contrast with national results is worth noting: most learners here earned very satisfactory or outstanding grades, while only about a quarter of Filipino 15-year-olds reached baseline proficiency in PISA 2022 science (OECD, 2023). Classroom grades and standardized assessments measure different things, but the gap is reason for caution in reading modular-period grades as evidence of mastery.

The relationship between involvement and achievement was positive but small (r = .142). This is consistent with meta-analytic evidence of a real but modest association (Barger et al., 2019; Boonk et al., 2018; Erdem & Kaya, 2020) and with Thomas et al. (2020), who found small effects of involvement relative to socio-demographic factors. Locally, Olivar and Naparan (2023) also found a positive correlation among Grade 12 learners in online classes, and Malabarbas et al. (2022) reported a similarly weak positive correlation among Grade 6

modular learners, while Naungayan et al. (2024) found no overall relationship among junior high school learners of working parents. Read together, these results suggest that the association in Philippine distance learning is consistently small, regardless of grade level or modality. Several features of the study may have kept the correlation low, including the restricted range of grades, a questionnaire that combines provisioning with academic help, and the use of a single quarter's grade in one subject. Parents of struggling learners may also step in more, while parents of high-achieving learners may find it easier to help, and a cross-sectional design cannot separate these possibilities (Grolnick & Pomerantz, 2022).

The grade differences by parents' sex, education, and employment are exploratory. The sex difference rests on 29 male respondents. The education difference was small ($\eta^2 = .033$), and no pair of groups differed significantly in the post hoc test, although learners of parents with only elementary schooling had the lowest mean. The employment difference was about two grade points. None survived a Bonferroni adjustment. These patterns may reflect resources that accompany parents' education and work, such as household income, learning materials, and the ability to answer a child's questions, rather than parents' sex or employment as such. Thomas et al. (2020) likewise found that socio-demographic variables outweighed involvement, Tan et al. (2020) showed that the academic benefits of several forms of involvement are stratified by parents' education, and pandemic-era learning deficits were largest among children from low socioeconomic backgrounds (Betthäuser et al., 2023). Household income, internet access, and other home conditions were not measured, so this explanation remains a hypothesis for future studies.

Theoretical and Practical Implications

Theoretical Implications

The findings carry three implications for theory. First, they lend support to Hoover-Dempsey and Sandler's (1997) model while pointing to a needed extension. Parents in this study were plainly motivated, yet their involvement clustered in the forms they felt competent to provide. In a home-centered system where many parents have limited schooling, self-efficacy appears to shape not only whether parents become involved but also which form their involvement takes. Second, the results suggest that Epstein's (2018) category of "learning at home" is too broad for modular contexts. Material provision, encouragement, and direct instruction all fall within it, yet they were reported at very different levels and may relate to achievement in different ways. Separating provisioning from instructional involvement, as Jabar (2021) recommends, would sharpen the typology for low- and middle-income settings. Third, the small correlation, together with the exploratory differences by parents' education and employment, is consistent with the view that the returns on involvement are stratified by family resources (Tan et al., 2020). Involvement may be necessary but insufficient where parents lack the knowledge or materials to turn effort into learning.

Practical Implications for Stakeholders

The findings suggest several practical steps, each tied to a particular group of stakeholders.

Schools and teachers. Parents were willing but not always equipped to teach. Short, plain-language guides attached to each module, brief orientations, and regular teacher check-ins by call, text, or messaging applications could give parents the confidence that the literature identifies as central to involvement. Such guidance should show parents how to help without answering modules for their children, for example by asking questions, checking progress,

and praising effort, given that autonomy-supportive involvement is more beneficial than pressure or taking over the work. With attendance at parent–teacher conferences very high, schools could extend this channel through a school page, group chats, or virtual meetings so that parents can raise questions without traveling to school. Schools that still use modules should also pair written outputs with brief checks of the learner's own understanding, such as short oral questioning or supervised quizzes, so that grades better reflect what learners can do on their own.

The Department of Education and schools division offices. DepEd Order No. 22, s. 2024 requires every school to prepare a learning and service continuity plan with suitable alternative delivery modes (Department of Education, 2024). These plans could include a standing parent-support component, such as module guides for parents, a schedule of teacher contact during suspensions, and simple SMS reminders, which makes such measures realistic for public schools with limited budgets. Building teachers' skills in designing and following up modular lessons would also help learners work more independently.

Parents and parent–teacher associations. Hiring tutors was beyond the reach of most families. Peer learning arrangements, teacher-led remediation, and clearer module instructions may relieve some of the teaching load that parents cannot carry. Parent–teacher associations could organize parent learning sessions in which parents who are more confident in a subject share strategies with others, and could help identify families that need materials or devices.

Local government units and the wider community. Learners whose parents have only elementary schooling may merit closer monitoring, without any assumption that these parents care less, since involvement was similar across groups. Local school boards and community partners could direct support, such as printed references, learning kits, or community study spaces, toward these households, particularly in areas where class suspensions are frequent.

Policy and society. The modest link between involvement and achievement indicates that parents cannot be expected to compensate fully for the absence of classroom instruction. Learning continuity policy should therefore treat parental support as a complement to, rather than a substitute for, teacher-led instruction, and should prioritize the early resumption of in-person classes after disruptions.

Contextual Contribution

The study contributes secondary-level, subject-specific evidence from the Philippines, a context that is underrepresented in the international literature on parental involvement and that faces unusually frequent disruptions to schooling. By pairing parents' reports with learners' actual Science grades, it moves beyond the descriptive and qualitative accounts that dominate local research and offers a baseline against which future studies of home-based learning during class suspensions can be compared.

Limitations and Future Research

The study has several limitations. It covered one school, one subject, and one quarter, so the findings may not generalize to other settings. Involvement was self-reported by parents,

grades came from a single source, and household income, connectivity, and learner characteristics were not measured. The design was cross-sectional and correlational, the subgroups were unbalanced and mostly composed of mothers, and several tests were run on a single dataset. The 15-item scale also combined provisioning (food, gadgets, materials) with direct academic help in one score; future instruments should treat these indirect strategies as separate dimensions, as Jabar (2021) recommends, and confirm the structure through factor analysis. Future research could include multiple schools and subjects, add income and learner-level variables, apply regression or multilevel models, gather learners' and teachers' views, and follow the same learners over time. Studies could also test, through controlled designs, whether structured parent guidance or SMS-based support during class suspensions improves learners' Science performance. Interviews with parents would further clarify what involvement meant for families who could not teach at home.

Conclusion

This study found that parents of Grade 10 learners were highly involved in modular distance learning, but mostly as providers rather than teachers. Meals, mobile phones, learning materials, module delivery, and encouragement were common, while tutoring and hired help were much less so, which suggests that the limit was capacity rather than commitment. Involvement did not differ across parents' age, sex, education, civil status, or employment, an indication that the will to support learning cuts across social lines in this school community. Its link with Science achievement, however, was positive but weak, and the tentative grade differences by parents' sex, education, and employment point to household resources as a source of inequality that involvement alone may not offset.

Taken together, the findings suggest that parents are best positioned as supporters of learning rather than substitute teachers, and that their involvement is likely to yield the most when schools equip them with clear guidance, regular communication, and practical tools. With typhoons, floods, and extreme heat now regularly suspending classes, strengthening this partnership is no longer an emergency measure but a standing requirement of Philippine education. Schools that invest in parents' capacity, and not merely their presence, will be better prepared to keep learning going when classrooms close.

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