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Online learning attitudes and basic computer literacy of teacher education students

Joel Cayabyab Ferrer ✉, Ilocos Sur Polytechnic State College
Joy C. Corres, Ilocos Sur Polytechnic State College

✉ *joelferrer1970@gmailcom*

Abstract: This study was conducted to evaluate the online learning attitudes and the basic computer literacy of the College of Teacher Education of the Ilocos Sur Polytechnic State College, Philippines during the school year 2021 - 2022. The descriptive survey method employed inferential statistics with a self-constructed questionnaire as the data gathering instrument with a reliability coefficient of 0.83. Total enumeration was used with 351 respondents. The findings revealed that the majority are females, they are in their first year, pursuing a degree in secondary education, lived in rural areas, and belonged to low-income families. Most of them were using smartphones, prepaid cards for their internet subscription which they sometimes experienced high-frequency signals, and were very proficient in their basic computer literacy. Along with cognition, students often experienced difficulties focusing their minds. The main problems in affective were feelings of isolation and lack of interaction. The psychomotor attitudes arise from the elimination of the actual practice. The income of parents and the location of the residence are factors in online resources. The variables in the online resources can affect their attitudes toward learning.

Keywords: Learning attitudes, Online resources, Computer literacy, Learning attitudes

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INTRODUCTION

The world was caught unprepared due to the outbreak of the Covid-19 pandemic. It has a deep impact on many aspects of life, such as work, leisure time, the daily basic activities of normal life, the economy, and much worst, the health of the people was even compromised including the established practices in the educational system.

For the education sector, the drastic change of mode of learning from face-to-face to remote learning, online learning, modular learning, and/or flexible learning, whatever the authorities call it, what is clear is that the absence of physical contact in the teaching and learning process created big challenges. It is, however, lamenting to note that the training of teachers along with the new skill requirements in pursuing the different modes of teaching efficiently and effectively, through online learning was seemingly inadequate due to the strict health care protocols. Therefore, the theory which was endorsed by Archimedes which in part states the really '… water seeks its level", i.e., inadequate training received by teachers in using the new mode of teaching, has resulted in a more questionable quality of learning from the learners along with the three domains of learning in all levels of the educational system. As stipulated by (Ferrer, 2021) the knowledge and abilities of students, particularly how they organize and conduct the teaching-learning process, reflect the type of institution they came from and the type of instructors who imparted the information to them.

As a result, paradigm adjustments in the teaching and learning processes in Philippine higher education demanded collaboration and strengthening among stakeholders. The initial step of the Commission on Higher Education (CHED) adopted and implemented Commission en Banc, Resolution No. 412-2020 regarding the Guidelines on Flexible Learning for private and public Higher Educational Institutions. With the given resolution, an institution may adopt an innovative model of learning relative to its present situation. However, it was clearly stated to have a flexible modality in the teaching-learning process. On the other hand, UNICEF expressed that "schools must be the last to be closed and first to be opened". This statement reminds us that institutions of learning should continue to deliver their mandate to educate the citizenry despite pandemics. One way to come up with a policy on the changes in the curriculum, an institution may articulate and innovate changes in the curriculum by assessing the learning experiences of the students during this pandemic. In the same instance, (Galang, 2021) specified that in the new normal classes, schools need varied changes such as in the curriculum and instruction, teacher, leadership, and engagement or participation that is adaptive and flexible.

In online learning, one of the basic requirements is to have an internet connection. However, the internet connection signal may vary from location. In Canada, (Sawada et al., 2006) remote or isolated places do not have broadband internet access. This situation does not only affect the speed of the internet signal but rather no signal at all. With these, we can say that location may affect the internet activity of the people. With the given premise, we are sure that this is not only true in Canada, likewise in Romania (Voineagu et al., 2016), which found out there were few numbers computers in rural areas due to low income, lack of access to the new method of marketing tools and mindsets,

In far-flung areas where geographical locations contribute to many problems such as lack of internet facilities, different mindsets of the people on how ICT improves their lives, where landline services could not be reached, and where cellphones were used usually used for social interaction and not for work purposes (Alampay, 2006) confirmed that due to these reasons, people preferred to have a "prepaid load" as their mode of payment to access internet signals where they find more affordable and convenient for them to transact.

On the use of modern devices or gadgets used during online activities, Ally & Wark (2018) confirmed that mobile devices such as smartphones and tablets are commonly

used technology among higher education students in conducting online classes that even provide the continuity of formal learning. In all aspects of education today, Neffati et al. (2021) likewise confirmed that the use of smartphones become widely accepted. To (Setyawan et al., 2020) another problem was reflected in the online classes, this is the incompatibility of gadgets used.

In the basic curriculum of Information Technology, word processing is the major topic. According to Bujdoso (2011), word processing is one of the most prevalent activities undertaken by computer users which includes the editing of text which is also popular. However, PDF files are primarily used for viewing and preserving document formats and not for editing purposes and can be easy to access and read. According to (Barrett, 2000), converting a PDF to a word document or vice-versa is suitable for high school and older students. Relative thereto, Buzdar et al. (2016) stipulated that students' preparedness to embrace a digital learning strategy is linked to their success in online learning settings.

Nowadays, because most classes are held online, Lari (2014) revealed that students taught utilizing a video projector and a PowerPoint presentation performed better than those taught using traditional techniques such as the usage of books. In addition, the use of tables, graphs and charts, and other graphical representation. Escalona (2019) revealed that it can help students better and clearer understanding of the lesson in the school and can even enhance motivation and promotes retention of learning.

On the cognitive aspects of learning, Chua & Luyun (2019) highlighted that online learning has a negative impact if it is not given enough attention owing to the significant cognitive load caused by the incorrect design of online learning activities. Parallel to this (Ginns & Leppink, 2019) the students' learning has a negative effect when the cognitive load or working memory is overburdened by conflicting demands of various processes.

Thus, this research primarily determines the extent of compliance with the requirements of online teaching and learning in the end because of assessing statistically how those identified variables affect the implementation of the attitudes of learning such as cognitive, affective, and psychomotor. Thus, provide empirical data that might investigate and create learning modalities that will suit the present situation of our institution from the traditional to flexible teaching and learning alternatives.

Further, the result of this study will likewise give information specifically to instructions and research. The school administrators, faculty members, and curriculum planners will benefit from the results of this study. It is from the actual survey of the educational environment, and the feedback from the respondents that a planner can design and introduce the most acceptable revisions in the policies and standards of a program, specifically in the curriculum content.

METHODS

Research Design

The study used the descriptive method of research as it attempts to determine the profile of respondents, the online resources and information, and the learning attitudes of students such as the cognitive, affective, and psychomotor. Specifically, the study also employed the correlational method to determine the relationship between the, a) profile and the online resources and information; b) profile and the learning attitudes; and c) learning attitudes and the online resources and information.

Participants

The study involved all students of the College of Teacher Education students from the first year up to the fourth year taking up the Bachelor of Elementary Education (BEED), Bachelor of Technology and Livelihood Education (BTLED), and Bachelor of Secondary Education with different specializations such English, Filipino, Mathematics, Science, and

Social Studies of the Ilocos Sur Polytechnic State College – Main Campus, Academic year 2021 - 2022. Total enumeration was considered with 351 students.

Data Gathering

The primary tool used in the study is a self-constructed survey questionnaire with a reliability coefficient of 0.83. The survey questionnaire consists of three parts. Part I of the questionnaire is the profile of the respondents such as the course, curriculum year, sex, location, and combined monthly income of parents. Part II is the online learning resources/information which includes, a) gadgets/devices used, b) internet subscription, c) availability of the frequency/internet signal, and d) commonly used basic digital literacy. Part III is the attitudes of learning such as the cognitive, affective, and psychomotor. The questionnaire was sent to the respondents through a google form. In cases where internet connectivity is a concern, the researchers personally distributed a hard copy of the questionnaire. The constructed questionnaire was validated by experts. However, to test the reliability, the said questionnaire was floated to another campus that acted as try-out respondents. Before the questionnaire was distributed/sent through google forms, the researchers sought permission through channels and the proper coordination with the head of the department was done.

Data Treatment

The data collected were tabulated and analyzed as bases for interpretation. Frequency counting, percentages, weighted means, and Pearson "r" were the statistical tools employed.

RESULTS

Table I presents the profile of the respondents along the course, curriculum year, sex, location of the residence, and the combined monthly income of parents.

It is noticeable that out of 351 students of the College of Teacher Education (CTE) was dominated by the students taking up Bachelor in Secondary Education (BSED) with 178 or 51%, followed by the Bachelor in Elementary Education (BEED) with 102 or 29% and Bachelor in Technology and Livelihood Education (BTLED) with 74 or 20%. The BSED program comprises different majors/specializations offered such as majors in Math, Science, English, Social Studies, and Filipino.

A large number of enrollees in the third year would imply that adding the number of students enrolled in the different specializations would simply consist of a greater number of enrollees as compared to the BEED and BTLED programs. When students were asked why they wanted to take up secondary education, their common answer was "it is difficult to teach the elementary pupils compared to high school students, and it's their personal choice to enroll in the BSED or BTLED programs. In the study by (Rico-Briones & Bueno, 2019) that students today play a significant in their decision-making process.

The data on curriculum year reveals that many of the student-respondents were in the first year with 123 or 35%, followed by the second year with 81 or 23% while the third with 78 or the third year got the lowest enrolment with 69 or 20%.

As shown on the said table along "curriculum year" there was an increase in the number of students in the fourth year with 78 or 22% compared to the third-year college. The increase of students would imply that those who stopped during the previous semesters/school year continued their studies at present.

The distribution of sex shows a remarkable difference between the number of male and female student-respondents. There are 66 or 19% of males as against the 285 or 81% females. This manifest and overwhelming acceptance that the teaching profession attracts more females rather than males.

As to the number of enrollees in tertiary education, the Commission on Higher Education (CHED) data in the Philippines as of October 2020 showed that there were 1, 870, 291 female students as compared to 1, 538, 134 male students. It is expected however that up to the present, it can still be said that students in tertiary education in the Philippines are dominated by the female group.

As revealed in the same table along "location", most of the student-respondents live in a place or barangay near the town with 235 or 67% followed by 62 or 18% who lived in a place/barangay located in an urban place or city. This manifested that in terms of geographical location, most of them can access the internet signal. On the other hand, 54 or 15% of the student-respondents who lived in mountainous places have a problem with the internet signal in which we all know that the signal in the interior community of mountainous places may have slow speed/signal due to geographical barriers.

TABLE 1. *Profile of the respondents*

Course	**F**	**%**
BEED	102	29
BSED	178	51
BTLED	74	20
Total	351	100
Curriculum Year		
First	123	35
Second	81	23
Third	69	20
Fourth	78	22
Total	351	100
Sex		
Male	66	19
Female	285	81
Total	351	100
Location		
Barangay in an Urban/City	62	18
Barangay in a Rural/Town	235	67
Barangay in an Interior Community/Mountainous Place	54	15
Total	351	100
Combine Monthly Income of Parents		
Below 10,000	265	75
10,001 – 20, 000	50	14
20, 001 – 30, 000	25	7
30, 001 – 40, 000	5	1
40, 001 – 50, 000	3	.8
50, 001 – 60, 000	2	.5
60, 001 – 70, 000	0	
70, 001 – 80, 000	1	.2
80, 001, and above	0	
Total	351	100

The combined monthly income of parents falls below Php. 10 000.00 with 265 or 75%. This indicates that this amount shows that students belonged to low-income families. Since poverty remains a persistent fact of life not only in poor countries but also in rich countries. It is surprising that despite having a low income, their parents still send their children to school. It can be said that this might be the best gift that they can give to their children and finish a college degree. Parents feel that obtaining a better education will provide them with possibilities to have a better future and finally pull them out of poverty. Access to education is likewise the best that a nation can give to its citizenry. In the Philippines, the basic and tertiary/college education in public schools is free. Just like

other countries, Philippines likewise identified that education is a significant factor in economic progress.

Table 2 presents the gadgets/devices used by the student-respondents in online learning. It is noted on the said table that most of them, 315 or 89.7% used cellphones/smartphones.

It is not surprising that most of the respondents used cell phones/smartphones the fact that before the pandemic most of them have already these kinds of gadgets. Using or acquiring other gadgets such as laptops/computers would be considered another expense the fact that the combined monthly income of their parents in this study as shown in the previous table was below Php. 10, 000.00. According to Akpan (2017), students used cell phones because it is convenient for them, they love to interact with, and it is affordable to purchase. College students today as stipulated by Lepp (2014) are one of the first generations of young people raised as users and rapid users of cell phone technology in this digital era and aside from using it in their studies, students used it for their leisure which would drive this leisure for their studies. For (Asio et al., 2021) smartphone ranks first on the list of learning gadgets available to college learners.

TABLE 2. *Description of gadgets/devices used in online learning*

Devices Used	F	%
Cellphones/Smartphones	315	89.7
Tablet	2	0.6
Personal Computers/Laptop	24	6.8
Borrowed Gadgets	10	2.9
Total	351	100

Table 3 shows the kind of subscription used by the students to access any information specifically on their online learning. As shown in the table, out of 351 students, 255 or 72.65% or a majority of them have a "prepaid card/load for their connection", and some had a "monthly subscription" with 61 or 17.4% while only a few were connected to the free internet of the barangay.

Since most of them are using cell phones, this may conclude that to access the internet connection, students preferred a pre-paid card/load. This result would simply agree with the idea of Arthur & Brafi (2013) that the cost of accessing the internet connection is expensive. In the same vein, students only open their internet connection if they need to use it, that is why they chose to have a prepaid internet load. On the other hand, the use of a laptop or personal computer as explained by Sarkar et al. (2021) had higher favorable attitudes toward online learning than those who are using mobile phones.

TABLE 3. *Internet subscription*

Statements	F	%
I have my monthly subscription (postpaid)	61	17.4
I use a prepaid card/load for my connection	255	72.6
I am connected to the internet of our neighbors	29	8.2
I am connected to the free internet of the barangay/municipality during my scheduled online learning	6	1.8
Total	351	100

Table 4 presents the data on the "availability of internet signal/frequency in our place". It is noticeable that 165 or 47% of students experienced the signal/frequency "sometimes with high frequency but not available all the time" followed by "often available with high frequency" with 87 or 25% of the students experiencing this type of signal and

some students with 22 or 6% of them experienced "always available with high frequency and despite some problems in their signal, this can be concluded that students can access or attend their online classes.

The strong or weak connectivity/internet signal as postulated by (Sawada et al., 2006), can be traced or vary from location and this may affect the speed internet signal. The problems with internet signals are not only happening in the Philippines but also other rich countries. Further, the speed of the internet that can be accessed by certain students or internet subscribers depends on the amount a certain subscriber has paid. The bigger the amount/subscription being paid, the fastest the speed. However, if the bulk of the students as mentioned by (Sarkar et al., 2021) could not access the internet due to technical and monetary problems, online learning could not get its desired learning outcomes. With a poor internet connection, everyday work can be disrupted and may leave students having online classes academically behind. Moreover, students cannot access online learning if there is no signal no matter how advanced their cell phone or computer.

TABLE 4. *Availability of internet /frequency signal in our place*

Statements	**F**	**%**
Always Available with high frequency	22	6
Often available with high frequency	87	25
Sometimes with high frequency but not available all the time	165	47
Seldom high with intermittent/irregular frequency	8	2.2
Poor Connectivity	68	19.4
No Trace of Internet signal at all time	1	0.4
Total	351	100

TABLE 5. *Basic computer literacy*

Statements	**Mean**	**Description**
1. Ability to use a word processing program	3.60	Very Proficient
2. Ability to format/edit documents	3.71	Very Proficient
3. Ability to create tables	3.49	Very Proficient
4. Ability to create shapes/Smart Art's/charts/graph	3.39	Proficient
5. Ability to create a PowerPoint presentation	3.73	Very proficient
6. Ability to create/use basic functions in excel (row/column /formula)	3.24	Proficient
7. Ability to convert word documents to PDF files or vice versa	3.55	Very Proficient
8. Ability to download and upload documents/assignments in the email/google	3.83	Very proficient
9. Ability to navigate the internet and conduct searches	3.09	Proficient
Grand Mean	3.51	Very Proficient

Legend: *Proficient – 2.61-3.40; Very Proficient- 3.41-4.20*

The knowledge of the basic computer digital literacy of the students is presented in **Table 5**. As shown in the said table their digital literacy, in summary, are "very proficient" with 3.51 as the mean rating. The student-respondents are naturally knowledgeable in applying these skills. This only shows that these skills were taught and practiced during high school years and followed up in their basic courses/subject during their succeeding years in college. With these results, we can conclude that this will help the students to be prepared for their life beyond higher education and might serve them well in their chosen careers.

Since most of the classes are conducted online, students are very much attuned and knowledgeable in using basic digital literacy skills. With their experiences in online learning, the academic experience was more important than technical experiences in digital literacy competency. Buzdar et al. (2016) specified that students' preparedness to

embrace a digital learning strategy is linked to their success in online learning settings. Parallel to this, (Deursen et al., 2017) that people who lack one type of digital skill may consequently lack another skill. They likewise concluded that a lack of digital skills leads to a lack of interaction with the internet, which reduces the possibility of an individual attaining real results.

It is said that to develop the learners in their totality, they should be taught to improve the domains in learning such as the cognitive, affective, and psychomotor.

Table 6 presents their attitudes cognitively in their online learning. The findings in the table showed that student-respondents are sometimes affected cognitively in their online classes and this is shown in the result with a grand mean of 3.08, described as "sometimes". However, items 5, 6, and 7 got a mean rating of 3.45, 3.44, and 3.443 respectively, all described as "often." These three items are related to describing a situation in their mental aspects such as difficulties in focusing the mind, preoccupied mind, and mentally blocked.

On the cognitive aspects of learning, Chu (2014) explained that the negative impact of online learning can be attributed to the cognitive load caused by the inappropriate online learning activities. Concerning this, the number of challenges confronted by the students in attending their online classes according to Malik & Javed (2021) can increase the level of stress among the students and prolonged stress over time can affect their academic performance, mental, and physical health. Contrary to the findings, Heersmink (2016) argued that the existing empirical data in cognitive psychology does not support strong conclusions concerning the Internet's adverse effects on memory. He added that ecologically-valid evidence is needed before giving a judgment that really, online learning has a negative effect.

TABLE 6. *Cognitive attitudes*

Statements		Mean	DR
1.	Discussions were more on receptivity rather than creativity	2.94	Sometimes
2.	Presentation of concepts appeals only to limited senses (e.g., hearing)	3.0	Sometimes
3.	Limited validation by the teachers concerning the understanding of concepts by the students.	2.89	Sometimes
4.	There was a decrease in the accumulation of learning.	2.97	Sometimes
5.	Difficulties in focusing the mind or paying attention to the requirements that need to be completed due to some environmental distractions at home.	3.45	often
6.	My mind is preoccupied or loaded with activities to think about and finish.	3.44	often
7.	I feel mentally blocked.	3.41	often
8.	I am free to learn progress through the topics/lessons at my pace of learning	2.87	Sometimes
9.	I am encouraged to direct my responsibility or become independent of my learning.	2.74	Sometimes
Grand Mean		3.08	Sometimes

***Legend**: Sometimes- 2.61 – 3.40; Often – 3.41 – 4.20* .

Table 7 presents the affective sides experienced by the students in their online learning. As shown in said table, it can be concluded that most of the students' affective attitudes are often affected by their online classes. As indicated in criteria number 2 "Reflective, abstract, and creative thinking are difficult to develop", criteria number 3 "Appreciation and analysis are difficult to develop (e.g., Desirable emotional outcomes), and criteria 6 "I feel a lack of interaction and isolation" were all "often" affected with a descriptive rating of 3.45, 3.44 and 3.41 respectively. The said findings can be attributed to students' motivation and discipline, accountability, and responsibility for learning. Parallel to the findings, affective domains must be taught with compassion, honesty, motivation,

confidence, communication, time management, teamwork, advocacy, and respect (Mirza & Mahboob, 2021) Moreover, (Bali & Musrifah, 2020) emotional aspects of the students that are affected are related to student learning interests, the implication of honesty, and a sense of responsibility.

TABLE 7. *Affective attitudes*

Statements	Mean	DR
1. Stimulus-response is too difficult to establish	2.75	Sometimes
2. Reflective, abstract, and creative thinking are difficult to develop	3.46	often
3. Appreciation and analysis are difficult to develop (e.g. Desirable emotional outcomes)	3.44	often
4. Assessment of the readiness of senses to accumulate learning is limited	2.88	Sometimes
5. I become quickly irritated or upset.	2.90	Sometimes
6. I feel a lack of interaction and isolation.	3.41	often
7. I am relaxed and become an active learner.	2.94	Sometimes
8. I have developed self-discipline.	3.11	Sometimes
9. I am confident enough in handling my work.	2.45	sometimes
Grand Mean	3.03	Sometimes

***Legend**: Sometimes- 2.61 – 3.40; Often – 3.41 – 4.20*

Table 8 reveals the psychomotor attitudes in learning. As indicated in the said table, item number 1 "online learning eliminates actual practice and motor coordination got the highest mean of 4.0 described as "often" and followed by item number 3 "outcomes of skills and habits cannot be measured immediately as in actual practice" with a mean of 3.50 described as "often", and the grand mean fall within the range of 2.94 described as "sometimes". The findings corroborate with the result in the study of (Seymour-Walsh et al., 2020) that the psychomotor domain is easy to teach in face-to-face classes. The problem with the implementation of the psychomotor domain as found out by Bali & Musrifah (2020) is the application of the assessment of student skills.

TABLE 8. *Psychomotor attitudes*

Statements	Mean	DR
1. Online learning eliminates actual practice and motor coordination	4.0	often
2. Limited explanation on how to relate symbols with meaning	2.90	Sometimes
3. Outcomes of skills and habits cannot be measured immediately as in actual practice.	3.50	often
4. Manipulative skills/abilities have limited use/relevance in online teaching and learning due to the needed application for counterchecking.	2.93	Sometimes
5. Actual usage of tools and equipment is eliminated in online learning	2.93	Sometimes
Grand Mean	2.94	Sometimes

***Legend**: Sometimes- 2.61 – 3.40; Often – 3.41 – 4.20*

Table 9 presents the relationship between the profile variables and the devices used in online learning. It can be gleaned that profile variables were significantly correlated to a location with -0.52 (r) "moderate correlation" and income with 0.98 (r) "very high correlation". It can be said that since schools could no longer avoid conducting classes online and students could no longer use just an ordinary cellphone today the fact that during online classes most of them stayed in their houses/residences where a location can be one of the factors. However, the use and purchase of smartphones and laptops can

be easily produced by the parents if income is not limited. This is supported by the idea of Talandron-Felipe (2020) that geographic location and income are both aspects of ownership that could affect internet access and can even be factors to own online devices. According to Konstan et al. (2012) low-income families often share technology devices. The gap between those with or without the Internet such as affordability, quality, and access or the so-called digital divides experienced by the whole world according to Mubarak et al. (2020) is significantly caused by income.

TABLE 9. *Relationship between the profile and the devices used in online learning*

Profile of the Respondents	r- value	Relationship
Course	-.031	No relationship
Year	0.06	No relationship
Sex	0.10	No relationship
Location of Residence	-0.52	Moderate Relationship
Monthly Income of Parents	0.98	Very high relationship

L*egend**: Moderate - +- 0.40 – 0.69; Very High +- 0.90-1.0*

A thorough grasp of **Table 10** shows that out of the five (5) pairings done, there were two (2) found to be significantly correlated to internet subscription such as the monthly income of parents and location of residence both with "r" value of 0.99 marked as a "very high relationship. This implies that these two variables lead to the idea that location can identify if a specific place can be reachable by an internet signal and if it is reachable, how much are you going to pay for a subscription. (Agarwal et al., 2005) stipulated that those who are living nearby urban/city or nearby internet sites have a direct impact on every individual to go online. Consequently, living nearby rural and city does not mean that internet access is no longer a problem, this is still dependent on the subscription rate. As explained by (Reddick et al., 2020) that socioeconomic status such as low-income families noticeably subscribes lower internet speed due to its affordability. In the same vein, a household with a higher income (Hatfield et al., 2003) preferred a high-speed internet connection.

TABLE 10. *Relationship between the profile and internet subscriptions*

Profile of the Respondents	r- value	Relationship
Course	0.09	No relationship
Curriculum Year	-0.02	No relationship
Sex	0.10	No relationship
Location of Residence	0.99	Very high Relationship
Monthly Income of Parents	0.99	Very High relationship

Legend*: Very High +- 0.90-1.0*

TABLE 11. *Relationship between the profile and availability of internet signal in our place*

Profile of the Respondents	r- value	Relationship
Course	-0.11	No relationship
Curriculum Year	-0.17	No relationship
Sex	0.10	No relationship
Location of Residence	0.57	High Relationship
Monthly Income of Parents	-0.18	No relationship

Legend*: High +- 0.70-0.89*

The relationship between the profile variables and the availability of frequency/internet signal in our place is shown in **Table 11**. As presented in the said table, it shows that only "location" with an "r" value of .57 is significantly correlated marked with "high correlation". This implies that the availability of internet signals may vary in a different geographical location. The internet speed may fluctuate if users move or

change locations/directions which may also depend on the coverage areas and barriers of a certain location. The difficulties in obtaining/finding internet signals and/or limited internet access according to Simamora (2020) are caused by geographical location and financial aspects.

Table 12 shows the relationship of the profile variables to the basic digital literacy skills of the students in which in this study digital literacy skills refers to the use of Microsoft applications. As noted, there was no relationship between the profile variables and the basic digital literacy skills. This finding implies that regardless of their status such as in their degree programs, curriculum year, gender, residential location, and economic aspects do not hinder learning the basic digital skills needed in the conduct of online classes. It also connotes that the students today are considered the millennial generations who have grown up with the influence of modern information technology and the constant impact of the internet. Further, Shopova (2014) explained that for the students to efficiently and effectively enhance the learning process, their digital skills and competence should be developed for them to adjust to the changing labor market. However, (Meyers et al., 2013) to be digitally literate includes concerns such as intellectual ability, security, privacy, creativity, and ethical accountability for the use and re-use of digital media.

TABLE 12. *Relationship between the profile and basic digital literacy*

Profile of the Respondents	r- value	Relationship
Course	0.20	No relationship
Curriculum Year	0.12	No relationship
Sex	0.01	No relationship
Location of the residence	0.189	No Relationship
Combined Monthly Income of Parents	0.18	No relationship

TABLE 13. *Relationship between the profile and the learning attitudes*

Learning Attitudes	Profile of the Respondents	r - value	Relationship
Cognitive	Course	0.07	No relationship
	Year	0.05	No relationship
	Sex	0.10	No relationship
	Location	0.19	No Relationship
	Income	0.16	No relationship
Affective			
	Course	0.05	No relationship
	Year	-0.05	No relationship
	Sex	0.01	No relationship
	Location	0.07	No Relationship
	Income	0.13	No relationship
Psychomotor			
	Course	0.10	No relationship
	Year	0.19	No relationship
	Sex	0.07	No relationship
	Location	0.01	No Relationship
	Income	0.16	No relationship

The relationship between the profile variables and the attitudes of learning such as the cognitive, affective, and psychomotor is shown in **Table 13**. All items listed in the profile variables like course, curriculum year, sex, location of the residence, and combined monthly income of parents were not found to be significantly correlated with the attitudes toward learning. This may imply that the given profile variables do not influence or affect any of the attitudes in learning. This study, further implies that the listed profile variables

are not factors that might intervene with the three domains of learning. Having the "no relationship" between the given variables and the three domains of learning might conclude the "self-efficiency" among the students. However, it can also be said that not all students have high efficacy. In the study by Cahapay (2021) gender/sex and monthly income had a substantial impact on self-efficacy.

Table 14 reveals the relationship between the online learning resources and the cognitive attitudes. The table shows that all of the four items listed on the online learning resources are found to be significantly correlated to the cognitive attitudes of the students. As manifested in the table item number 3 "availability of the frequency/internet signal in our place" and item number 2 "Online subscription" marked with a "high relationship and with an "r" value of 0.74 and -0.71 respectively. The findings agree with the idea of Mamolo (2022) that unstable and slow internet connections are some of the reasons why it is difficult to attend and learn online classes. Item number 3 was marked as a "moderate relationship" with an "r" value of -.068 while item number is also correlated with an "r" value of 0.30 marked as a "low relationship". With the findings, it is concluded that online learning resources have something to do with cognitive attitudes. How can students join online classes without resources used such as devices, internet subscriptions, signals, and digital literacy skills? How can teachers develop the cognitive aspects of the students in an online class without those resources mentioned?

TABLE 14. *Relationship between the online learning resources and cognitive attitudes*

Online Learning Resources	r- value	Relationship
Devices Used in Online Learning	-0.68	Moderate relationship
Internet Subscription	-0.71	High relationship
Availability of the Frequency/Internet Signal in our Place	0.74	High relationship
Basic Digital Literacy	0.30	Low relationship

***Legend**: Moderate - +- 0.40 – 0.69; High +- 0.70 – 0.89; Low +- 0.20 – 0.39*

TABLE 15. *Relationship between the online learning resources and affective attitudes*

Online Learning Resources	r- value	Relationship
Devices Used in Online Learning	0.61	Moderate relationship
Online Subscription	-0.41	Moderate relationship
Availability of the Frequency/Internet Signal in our Place	-0.31	Low relationship
Basic Digital Literacy	0.36	Low relationship

***Legend**: Moderate - +- 0.40 – 0.69; Low +- 0.20 – 0.39*

Table 15 presents the relationship between the online learning resources and affective attitudes. The table shows that the four items in online resources are significantly correlated to the affective attitudes toward learning. Item numbers 1 and 2 were 'moderately correlated" towards the affective attitudes in online learning with "r" values of .61 and -0.41 respectively while item number 4 with 0.36 (r) and item number 3 with -0.31(r) were both marked as 'low relationship. Thus, the resources mentioned can influence the affective aspects of learning. The results also connote the findings of Delicano (2021) that internet accessibility and subscription or connectivity including financial constraints were among the downsides of online classes. It was also mentioned in his study that the sudden shift in the mode of learning significantly affects the emotional and mental conditions of the students.

The unexpected modification of learning due to Covid 19 according to Bali & Musrifah (2020) greatly influences the affective domains of students learning like the learning interests, the value of honesty, sense of responsibility, and discipline of students in general. Considering this effect, according to Sari & Rahmah (2019) the conduct of

virtual learning can increase the cognitive domain; however, it does not follow an increased result in the affective sides.

Table 16 shows the relationship between the online learning resources and Psychomotor Attitudes. As indicated, item number 1 with -0.68 (r), item number 2 with 0.57 (r), and item number 3 with -0.45 (r) were all marked with a "moderate relationship" while item number 4 with 0.26 (r) with a "low relationship" but still significantly correlated. This means that online resources can affect and influence the psychomotor attitudes of learning.

The three domains/attitudes in learning are the major factors in the teaching-learning process. However, of the said domains (Apacible et al., 2018) stated that the psychomotor domain is the most important since it analyzes how individual acts depending on what he has learned. Relative thereto, (Mukhtar et al., 2020) stressed that faculty members should learn other online modalities and instructional materials/devices that can reduce cognitive load and should be more on interactive learning activities.

TABLE 16. *Relationship between the online learning resources and psychomotor attitudes*

Online Learning Resources	r- value	Relationship
Devices Used in Online Learning	-0.68	Moderate relationship
Internet Subscription	0.57	Moderate relationship
Availability of the Frequency/Internet Signal in our Place	-0.45	Moderate relationship
Basic Digital Literacy	0.26	Low relationship

***Legend**: Moderate - +- 0.40 – 0.69; Low +- 0.20 – 0.39*

DISCUSSIONS

The presence of a coronavirus led to a pandemic that haunted the whole world. This pandemic has remarkably and continually affected the present status of the economy, social and cultural practices, political decisions of the leaders, specifically the health and lives of the people that should not be compromised, and even the established practices in the educational policies practically on the teaching and learning process were also drastically changed. Thus, the retrogressive and disastrous effects of this phenomenon on the citizenry, young and old, employed or unemployed entrepreneur workers, rich or poor, school administrators, teachers or students redound to the development of the different modes of teaching the domains of learning in a manner which can safeguard the health and welfare of the younger generation. As a result, the shift in the paradigm of the teaching-learning processes.

As mentioned in the previous data, students' reasons for taking up a bachelor's degree in secondary education "is their personal choice." Aside from this mentioned reason, the study (Balyer & özcan, 2008) states that students selected teaching for various unselfish reasons and intrinsic motivations. Since it is their personal choice, it can be concluded that they considered teaching to be a socially valuable and vital job. Parallel to this, students' decisions making, according to (Rico-Briones & Bueno, 2019) played an essential role in choosing what they liked. As to the "curriculum year," many enrolled students were in the first year of college. This can be attributed to the fact that first-year students flock to attend state-owned colleges to avail themselves of free tertiary education.

It was also found that more females were enrolled in the teacher education, which implies it attracts females and is said to be a female-dominated profession. The female group dominated data for students-enrollment in the year 2020, according to Commission on Higher Education in the Philippines. Most students live where they can access an internet signal, but those who live in mountainous places experience a slow speed of internet signal. It can be explained that geographical location is a factor that affects the speed of the internet that can even affect the activity of the students attending their online classes. The speed may fluctuate because the signal varies depending on the coverage area.

Once it is difficult to access the internet or digital media devices, this may cause digital divides or geographical isolation. Once this happens (Correa & Pavez, 2016) this geographical isolation forms personalities and attitudes toward new experiences.

Moreover, (Alampay, 2006) explained that geographical location is an issue specifically in remote places and contributes to various challenges such as a lack of internet facilities and diverse people's perspectives on how ICT affects their life. Another challenge confronting how they attend their online classes is the parents' income. In this situation, parents find it challenging to buy gadgets for their children. However, as stipulated by (Rajakumar et al., 2020) since modern e-gadgets are essential for the student's academic life and become part of everyday life, it is also the buying pattern. Further, to have this gadget, students emotionally blackmail their parents. It is interesting to note that despite having low-income parents, they persist in sending their children to school. It only shows that Filipinos give high value to education.

On top of the list of gadgets the students use are the cellphone/smartphones. It is evident that before the start of the pandemic, students already had this gadget for their entertainment used. For (Ally & Wark, 2018) the most commonly used gadget among higher education students in online classes is the use of a cellphone. (Asio et al., 2021) confirmed that smartphone ranks first on the list of learning gadgets used by college students. (Gitumu Mugo et al., 2017) likewise agreed that the smartphone is the most popular mobile device used today. In the same instance (Neffati et al., 2021) specified that smartphones have become widely accepted. (Akpan, 2017), students use cell phones because they are convenient, love interacting, and affordable. As specified by (Lepp, 2014), in this digital era, young people are rapid users of cell phones. According to (Jacob et al., 2008) the new breed of university students can easily connect to online classes using technology and innovative mobile gadgets. However, compatibility is one of the problems that confront students today in online classes' use of these gadgets.

Most students used the prepaid card for their internet subscription/connection. This can be implied by the idea that having a monthly subscription is expensive considering the low income of their parents. This result would agree with the idea of(Arthur & Brafi, 2013) that the cost of accessing the internet connection is expensive. In the same vein, students only open their internet connection if they need to use it; that is why they choose to have a prepaid internet load. (Stork et al., 2013) Prepaid mobile internet access gives governmental initiatives to increase internet access for low-income families because it requires less financial resources and does not rely heavily on electricity at home. With these findings and observations, students in the Philippines usually buy prepaid cards and register to a different network for their connections.

In the conduct of online classes, students experienced high frequency but were not available all the time. According to (Sawada et al., 2006) the high and low internet signals vary from location. At the same time, (Lakhal et al., 2017) mentioned it is true that nowadays, it is vital to reduce education's reliance on location and time and promote learning adaptability, but how we can arrive at the desired learning outcomes if students cannot access the internet (Sarkar et al., 2021)

In terms of basic computer literacy, students are "very proficient." This implies that students know how to use computer and application software for practical purposes. Digital competency in learning is a significant factor in the success of online classes (Buzdar et al., 2016). Although students have this literacy in computers, seemingly, it does not solve the problem of students if they have learned in the conduct of online learning. In the study of (Bacolod, 2022), it was revealed that both students and teachers still find learning difficulties in their online classes, and this can be traced to their previous learning environment, in which they got direct face-to-face instruction and were aided by the teacher compared to the online learning which is most of the time is self -learning.

Students' cognitive attitudes were affected by online learning. This cognitive aspect described difficulties in focusing their mind, pre-occupied mind, and feeling blocked

mentally. The problems encountered by the students in their online classes, as explained by ((Malik & Javed, 2021) can affect academic performance and mental and physical health and increase stress among the students. Contrary to the findings (Ismail et al., 2010) mobile learning can influence students' motivation, metacognition, and psychological need fulfillment. In a different scenario, (Heersmink, 2016) specified that strong judgments about the adverse effects of the internet on memory are not supported by current empirical research in cognitive psychology.

The affective attitudes of the students are often affected by online learning, as revealed in the results. In addition, the findings would agree on the definition as stated in the taxonomy of objectives that affective attitudes of learning as defined in the teaching and learning consist of the feeling, emotions, and attitudes of the learners, including values and categorized into the five levels such as receiving, responding, valuing, organizing, and characterization. To that are the findings in the study by (Mirza & Mahboob 2021), in which affective domains must be taught with compassion, honesty, motivation, confidence, communication, time management, teamwork, advocacy, and respect. Similar to this is the results in the study of (Bali & Musrifah, 2020) that affective and psychomotor domains are concerned with how students learn, value honesty and accountability, and behave in class.

The psychomotor domains of learning involve using motor skills, physical movement, body coordination, and skills development measured in speed, distance, procedure, accuracy, procedures, and techniques. The results revealed that "online learning eliminates the actual practice and motor coordination. In the study of (Seymour-Walsh et al. 2020), the psychomotor domain is easy to impart in face-to-face classes. The findings also agree with Edgar Dale's cone of experience that "learners retain more information by what they do, as opposed to what they heard or observed."

Geographical location and income can affect the quality of internet access. According to (Alampay, 2006), remote areas contribute to many challenges like lack of internet facilities, different people's mindsets on how ICT improves their lives, where landline services cannot be reached, and where cellphones are used for social interaction and not for work purposes. The so-called "digital gaps," which affect everyone in the world and include differences in access, cost, and quality of the internet, are primarily a result of income, as explained by (Mubarak et al., 2020). Moreover, (Lu & Yu, 2009) states that location significantly modifies the mobile data service acceptance model, and income affects how mobile data service admission choices are made. To (Reddick et al., 2020) low-income families, internet connection is noticeably slower because of its cost, while a household with a higher income (Hatfield et al., 2003) subscribes to a high internet connection(Simamora, 2020) geographical location and financial aspects contribute to challenges in obtaining/finding quality internet signals.

There was no found relationship between the profile and basic digital computer literacy and the relationship between the profile and the attitudes in learning. Regardless of the profile of the respondents, such as their degree program, curriculum year, gender, residential location, and economic status do not influence their basic computer/digital literacy and learning attitudes.

The three (3) learning attitudes/domains in learning were found to be significantly correlated to the online learning resources. The fundamental question is, "How can teachers and students conduct online learning classes without these resources such as the devices used, internet subscription, internet signal, and basic computer/digital literacy?"As a result, the resources indicated can impact the emotional components of learning. The findings also support the conclusions of (Delicano, 2021) that internet access, subscription or connectivity, and budgetary restrictions were among the disadvantages of online classes. His research also shows that abrupt changes in learning mode substantially impact students' emotional and mental health. However, according to the study by (Sari & Rahmah, 2019), the conduct of online learning can increase the

cognitive aspect but not the affective side in some instances. However, according to (Apacible et al., 2018) the psychomotor domain is the most essential since it examines how an individual responds based on what he has learned.

The study revolves around the following theories such as cognitive load (CLT), self-determination (SDT), and progressivism. Students today are now overburdened with learning activities in this online learning. In his cognitive load theory, John Sweller suggests that human working memory can only contain a certain amount of knowledge at any given moment, and instructional approaches should avoid overloading it to maximize learning. Along the line of progressivism theory by John Dewey, this theory claims that changes are a process of transformation, an unavoidable and lasting force like reality. In its natural condition, progressivism believes that education is always in the process of advancement and growth; hence, it must be prepared to adjust methods and policies to correspond to new information, ideas, and changes in educational laws/policies. Edward Deci and Richard Ryan introduced the self-determination theory. According to this theory, the satisfaction of three primary intrinsic human psychological needs (autonomy, competence, and relatedness) is required for healthy human functioning. Self-determination theory (SDT) (Jones & Issroff, 2007)) is aided by m-learning. The usage of mobile devices allows for student choice, which fosters feelings of accessibility, ownership, enjoyment, and fulfillment.

CONCLUSION

The respondents manifest different backgrounds, they used smartphones and pre-paid for their internet connections, and are proficient in applying their basic computer/digital literacy. Students often experienced difficulties in focusing their minds due to being mentally blocked, burdened with activities to think about and finish, feeling of isolation and lack of interaction, and the elimination of actual practice which cannot be measured immediately. The income of parents and the location of the residence are factors in determining the online materials/resources used. The resources used in online learning can affect/influence the attitudes of learning such as the cognitive, affective, and psychomotor.

To ease the negative effects of online learning, teachers should be retooled to learn and use various online modes of instruction, implement blended learning, comply with the requirements/protocol to conduct face-to-face classes, and conduct stress debriefing among teachers and students. Values must be taught with utmost concern.

Since the study is purely descriptive, it may also employ a qualitative part to validate and accommodate other problems and issues that affect their learning attitudes. Likewise, the said study may also correlate their grades to their attitudes in learning.

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PROFILE

Dr. Joel C. Ferrer is a lecturer at the College of Teacher Education and Graduate School of the Ilocos Sur Polytechnic State College, Philippines. He has been in the academe for more than two decades. His research interests include quantitative and qualitative research on management and pedagogy.

Dr. Joy C. Corres is a lecturer at the College of Teacher Education of the Ilocos Sur Polytechnic State College, Philippines. She has been in the academe for almost 10 years. She is also a guest lecturer at the Universitas PGRI Madiun. She is an active researcher in the field of mathematics and pedagogy.