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Innovativeness, Self-efficacy, and Online Learning Readiness of Pre-service Teachers

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Abstract

Institutions of higher learning particularly at the teacher-training institute like the College of Teacher Education are at the forefront of trailblazing innovation in the overarching epoch of exuding self-efficacy as students in these academic programs will soon be the models and force multipliers of innovation in their own classroom. This study is designed to determine the innovativeness, self-efficacy, and online learning readiness of the pre-service teachers in the locale of the study. Employing adopted questionnaires in a descriptive-inferential research design, the following are known: Majority of the respondents are in the stage of early majority in terms of their innovativeness; majority of the respondents have very high self-efficacy; the respondents are much ready to go online; the innovativeness, self-efficacy, and online learning readiness of the respondents are comparable when grouped by their sexes and programs of studies; and innovativeness and self-efficacy are very highly significant related to the respondents' online learning readiness. The results imply that the respondents are more than ready to go online; hence, online learning modalities may be institutionalized in the locale of the study especially in the now-normal of education on top of the objective of bringing-out innovation and self-efficacy among the pre-service teachers. Activities involving virtual instructions and learning engagements may be introduced as part of the act of embracing metaverse in education: the future of our educative processes and procedures.

Keywords: Innovation, pre-service teachers, online learning, self-efficacy.

1. INTRODUCTION

The rise of technology in the twenty first century has created multitude of opportunities not only to business sectors, medicine, agriculture, but also in education. As technology revolutionizes in the field of education, it drives globalization, digital transformation and greatly expanded access to education enabling students to have an easy-to-access information, accelerated learning, and fun opportunities especially in the higher education where technology-enhanced learning (TEL) methods are often used (Schweighofer, Weitlaner, Ebner, & Rothe, 2019).

With the occurrence of the unprecedented CoViD-19 pandemic, educational institutions have been forced to shift to online learning. The lockdown has become a big

problem in the teaching-learning process in most institutions and the administration, teachers and students were caught unprepared to apply and utilize electronic learning system (ELS) as the prime mode of learning delivery.

The adoption of e-learning brought many advantages to the education system especually in the continuity of learning during the peak of the pandemic. E-learning allows for the management of content through a variety of learning activities and an improvement in the standard of instruction. By offering more opportunities for engagement, increasing accessibility of course materials, offering automated and flexible assessment methods, and fostering technological literacy, e-learning environments benefit students' learning (Ergün & Adıbatmaz, 2020). However, the use of ELS also posed a number of problems and challenges to both teachers and students most especially those who have poor internet connectivity and technological literacy, limited gadgets (Basar, Mansor, Jamaludin, & Alias, 2021) and low acceptance to this modality (Tamal, Sarker, Islam,&Hossain, 2022). These mentioned drawbacks only prove that electronic learning readiness and efficacy are crucial factors in students' learning journey.

For a successful implementation of effective e-learning, physical infrastructure, technical literacy and psychological readiness are required (Bubou, 2022) for an active student engagement. An individual must have the willingness and be ready to adopt, adapt and survive the challenges and demands of online learning. This means to say that success in e-learning is determined by the three related factors namely - individual innovativeness, self-efficacy and readiness. Both individual innovativeness and self-efficacy influence online learning readiness among students. Of the two stated factors, individual innovativeness has greater effect on online learning readiness (Ahmad & Salim, 2021; Bubou, 2022), which implies that individuals that are highly innovative are more likely to be willing to embrace new technology, in this example, e-learning.

Quirino State University is a higher learning institution in the Southern Cagayan Valley that implemented online learning system as a mode of instructional delivery to its students. Without a choice, students who mostly experience poor internet connectivity and are from low-income families had to utilize this mode to cope up with their studies. Thus, this study was conducted.

1.1 Objectives of the Study

This study is aimed at determining the innovativeness, self-efficacy, and online learning readiness of the pre-service teachers in the locale of this study. Specifically, it aimed to:

1. Determine the individual innovativeness of the pre-service teachers of QSU-Diffun;
2. Determine the general self-efficacy of the pre-service teachers of QSU-Diffun;
3. Determine the online learning readiness of the pre-service teachers of QSU-Diffun;
4. Evaluate significant differences on the individual innovativeness, self-efficacy, and online learning readiness of the respondents when grouped by profile;
5. Evaluate significant relationship on the individual innovativeness, self-efficacy, and online learning readiness of the respondents; and
6. Propose developmental plan to improve the individual innovativeness, self-efficacy, and online learning readiness of the respondents.

2. RESEARCH METHODOLOGY

This study employed the Descriptive-Inferential Research design as it intends to describe the phenomenon, innovativeness, self-efficacy, and online learning readiness of the respondents, without manipulating any variable during the conduct of the study. Inferential studies enable the researchers to compare and conclude on the results based on statistical analyses: comparative and correlational.

This was conducted to 147 pre-service teachers enrolled during the second semester, SY 2021-2022, Quirino State University-Main campus. This number is determined through G*power: power of 95 and error of 5. The respondents voluntarily responded to the request of the authors via google form. Identities of the respondents as to program enrolled in and sex were verified: Program of Studies – BSE, 53 or 36.05%; BEEd, 56 or 38.09%; BTLEd, 38 or 25.85%; and Sex – Female, 129 or 87.76%, Male, 18 or 12.24%.

The research instruments used in this study are adopted from prior studies which gained acceptable validity and reliability:

1. *Instrument on Innovation.* The instrument used in this section was adopted from Hurt, Joseph, and Cook (1977); albeit old, indicators still holds to be true as perceived by the proponents in assessing individuals' orientations towards change. The instrument had been found to be highly reliable and the predictive validity is good: an alpha of .89. In the current study, the alpha is .92.

The questionnaire has two groups of items: Group 1 is composed of items that elicit their positive characteristics on innovation while Group 2 is composed of items that elicit their negative characteristics. The following is the scoring guide in determining their innovation index as adopted from the study of Kicer and Odabasi (2010):

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Add the scores for items 4, 6, 7, 10, 13, 15, 17, and 20;

Add the scores for items 1, 2, 3, 5, 8, 9, 11, 12, 14, 16, 18, and 19;

Determinant of the innovativeness index. In general, people who score above 68 are considered highly innovative and people who score below 64 are considered lowly innovative.

Innovation Index=43+Step 2 score-Step 1 score

Table 2. Indices of Individual Innovativeness

Categories of Individual Innovativeness	Score
Innovators	81 +
Early Adopters	69-80
Early Majority	57-68
Late Majority	46-56
Laggards/Traditionalists	45 -

2. *Self-efficacy.* The General Self-efficacy Scale (GSE) is a self-report that measures self-efficacy (Schwarzer & Jerusalem, 1995). This is correlated to emotion, optimism, and work satisfaction. The proponents claimed that negative coefficients were found for depression, stress, health complaints, burnout, and anxiety. The reliability of the instrument is set at .8 (Cronbach's alpha); which suggests reliability. The total score is calculated by finding the sum of the all items. For the GSE, the total score ranges between 10 and 40, with a higher score indicating more self-efficacy. In the current study, this questionnaire has an alpha of .95.

3. *Online Learning Readiness Scale.* This was adopted from the study of Hung, Chou, Chen, and Own in 2010. It has five parameters: computer or internet self-efficacy, self-directed learning, learner control, motivation for learning, and online learning confidence. In the current study, the alpha is known at .79.

The gathered data were treated with frequency, percent, mean, t-test, ANOVA, Scheffe test, and Pearson-r: All were done via SPSS whose significance is set at .05 level.

3. RESULTS AND DISCUSSION

The gathered data on the individual innovativeness, general self-efficacy, online learning readiness of the pre-service teachers of QSU-Diffun are presented and discussed towards the crafting of a developmental plan in improving such in the College of Teacher Education in the locale of the study.

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3.1 Innovation Index of the Pre-service Teachers

Table 1. General Innovation Index of the Pre-service Teachers

Category		Frequency	Percent
1	Innovators	1	.68
2	Early Adopters	3	2.04
3	Early Majority	116	78.91
4	Late Majority	27	18.37
Total		147	100

As shown in the Table 1, majority of the respondents fall under early majority category (116, or 78.91%), the middle category for innovation under the model developed by Hurt, Joseph, and Cook (1977) and eventually characterized by Kicer and Odabasi (2010). The diverging categories towards early adopters and innovators in the current study are meager compared to the category towards being in the late majority category. One good thing in this result is the absence of laggards or traditionalists among them.

Corollary to the nature of the respondents as prospective would-be teachers in the fount of innovation, the foregoing results imply a great significance and challenges on the idea that institutions of higher learning are at the forefront of trailblazing innovation. Further, these concordances of the respondents are in a cahoot of saturating innovation which call for curating mechanisms in optimizing innovation since they will soon be the models in their own classrooms. Eventually, this calls for the development of manipulative skills among them, an attribute which is expected to be mastered and exuded by every teacher.

The results of the study of Bautista et al. (2018) suggested rationalizing learning encounters in the College of Teacher Education to further the technical and professional know-how of these would-be teachers since most of the respondents in their study fell under late majority category.

Thus, innovation should be cultivated, modelled, and practiced by the faculty in the College of Teacher Education reflective of the 21st century skills expected of an innovative teacher.

Hypothesis 1. There is no significant difference on the innovation index of the pre-service teachers when grouped by profile

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Table 1.1 Innovation Index of the Respondents when grouped by Programs of Studies

Course	Innovation Index	Description	F-value	p-value
BEEd	59.321	Early majority	.777	.462
BSE	60.000	Early majority		
BTLEd	60.657	Early majority		

Presented in Table 1.1 are the innovation indeces of the respondents when grouped by programs of studies. In the locale of the current study are three degree programs in teacher education. As gleaned on the table, all programs of studies earned indices reflective of being in the early majority which suggest noninfringement of exuding innovation. It further shows that their concordance to innovation is comparable as reflected in the ANOVA results with a p-value of .462. Hence, this study failed to reject the null hypothesis stating that there is no significant difference on the innovation index of the pre-service teachers when grouped by programs of studies. It implies that innovativeness of the studentsis incomparable regardless of the program of study they are enrolled.

Table 1.2 Innovation Index of the Respondents when grouped by Sex

Course	Innovation Index	Description	F-value	p-value
Male	61.533	Early majority	.784	.445
Female	59.321	Early majority		

Presented in Table 1.2 are the indices of the respondents when grouped by sex. Reflected in the table is the margin on the indices of the male and female respondents although they both belong to the early majority group: 2.212, which is a negligible margin. This is further accorded by the t-test results with a p-value of .445 which suggests comparable results. Regardless of sex, the students are lowly innovative and are notable to adoptand adapt to the changes in their learning activities.In the study of Bubou, G.M. (2022), they have shown that innovativeness of students is significantly related to their e-learning readiness, and that male students are more e-learning ready than the females.

3.2 Self-efficacy of the Pre-service Teachers

Table 2. General Self-efficacy the Respondents

Category		Frequency	Percent
1	Moderate	6	4.08
2	High	63	42.86
3	Very High	78	53.06
Total		147	100

Presented in Table 2 is the general self-efficacy of the respondents. It shows that the scores are skewed to the right emanating from moderate to very highly efficacious. It can be inferred further that at least 95% of the respondents are of high to very high self-efficacy which indicates a higher degree considerable to their current tasks as practicing teachers.

Self-efficacy centers on the idea of believing in one's capacity of attaining performance gradients vis-à-vis known parameters of being efficacious. In the case of the respondents of the study, they feel highly to very highly efficacious with their tasks as pre-service teachers. It was known that teachers are self-driven and self-motivated individuals who strive towards the attainment of a specific goal achievement of an efficacious teaching and learning environment (Bautista et al., 2017; Zimmerman, 2002; Knight, 2002). In light of the Self-Efficacy Theory, self-efficacy plays a considerable impact in research and education (Bandura, 1994). Researches claimed that both research and education are overarching disciplines played by teachers which involve their creativeness and innovation (Yates, 2007; de Vries et al, 2013).

Hypothesis 2. There is no significant difference on the self-efficacy of the pre-service teachers when grouped by profile

Table 2.1 Self-efficacy of the Respondents when grouped by Program of Studies

Course	Mean	Description	F-value	p-value
BEEd	30.830	High	.116	.891
BSE	30.420	High		
BTLEd	30.771	High		

Presented in Table 2.1 is the self-efficacy of the respondents when grouped by studies. The mean self-efficacy of the three groups corresponds to a descriptive interpretation of *high* with a marginal mean difference between and among the three groups of respondents. Furthermore, it shows that the self-efficacy of the respondents when grouped by program of studies is comparable as suggested by the F-value and p-value of the ANOVA test conducted: .116 and .891, respectively. This suggests that the study along with its parameters failed to reject the null hypothesis which states that There is no significant difference on the self-efficacy of the pre-service teachers when grouped by program of studies. Self-efficacy is known toinfluence students' academic performance. Based on the study of Hayat, Shateri, Amini, and Shokrpour (2020), the learners' self-efficacy has a significant and positive relationship with academic performance, metacognitive learning strategies, and positive learning-related emotions.Furthermore, academic self-efficacy also significantly affect student achievement and satisfaction(Doménech-Betoret,Abellán-Roselló, & Gómez-Artiga, 2017).

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Table 2.2 Self-efficacy the Respondents when grouped by Sex

Course	Mean	Description	t-value	p-value
Male	32.133	Very High	1.328	.186
Female	30.488	High		

Presented in Table 2.2 are the self-efficacy of the respondents when grouped by sex. The mean self-efficacy of male is higher than those of their female counterparts. The mean difference of 1.645 is negligible as indicated by the t-value of 1.328 and p-value of .186. This suggests that the study along with its parameters failed to reject the null hypothesis which states that There is no significant difference on the self-efficacy of the pre-service teachers when grouped by sex. The result implies that students, whether male or female, have statistically similar level of self-efficacy. Although it can be gleaned from the table that self-efficacy of male students is described as "Very High" as compared to females which are described as "High". According to Pratiwiand Hayati (2020), the higher the student's self-efficacy, the higher the student's learning achievement. On the contrary, lower the self-efficacy entails lower students' achievement.

3.3 Online Learning Readiness

Table 3. General Online Learning Readiness of the Respondents

Online Learning Readiness		Mean	Descriptive Interpretation	Rank
1	Computer or internet self-efficacy	2.942	Much ready	2
2	Self-directed learning	2.804	Much ready	3
3	Learner control	2.664	Much ready	5
4	Motivation for learning	3.270	Much ready	1
5	Online learning confidence	2.783	Much ready	4

Presented in the foregoing table is the general online readiness of the respondents along computer or internet self-efficacy, self-directed learning, learner control, motivation for learning, and online learning confidence. It shows that all parameters are vouched with a descriptive interpretation of *much ready*. Moreover, motivation for learning as well as computer or internet self-efficacy and self-directed learning are among the three most vouched with much readiness. This denotes that the respondents are exuding much readiness with their motivation and being self-directed to learn are at the helm of doing and joining their online classes in this time of pandemic. Indeed, learners of today are self-directed and motivated learners' vis-à-vis the needed 21st century skills that a future professional must master. In the case of the current study, the respondents are the would-be-teachers who are claimed to be are self-directed and motivated learners under the overarching wagon of innovation (Bautista et al., 2017).

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Hypothesis 3. There is no significant difference on the online learning readiness of the pre-service teachers when grouped by profile

Table 3.1.1 Computer and Internet Self-efficacy of the Respondents when grouped by Programs of Studies

Computer/ internet self-efficacy		BEEd		BSE		BTLEd		F-value	p-value
		Mean	DI	Mean	DI	Mean	DI		
1	I feel confident in performing the basic functions of Microsoft office programs (MS Word, Excel, Powerpoint, Publication)	2.792	MR	3.040	MR	3.057	MR	1.484	.230
2	I feel confident in my knowledge and skills on how to manage software for online learning	2.717	MR	2.900	MR	2.971	MR	1.207	.302
3	I feel confident in using the internet (Google, Yahoo, Chrome, Edge) to find or gather information for online learning	2.943	MR	3.020	MR	3.171	MR	.899	.409
Average		2.818	MR	2.989	MR	3.067	MR	1.392	.252

Legend: MR-Much Ready

Presented in the foregoing table are the computer and internet self-efficacy of the respondents when grouped by programs of studies. It can be seen that the indicators set forth in this study are vouched as *much ready* across all programs of studies. Moreover, the F and p-values do not post significant differences on the vouched computer and internet self-efficacy of the respondents. Hence, the study failed to reject the null hypothesis particular to computer and internet self-efficacy of the respondents with respect to their programs of studies. In contrast, computer and internet self-efficacy in students of various programs of the public universities in Pakistan was found to be significantly different (Rafique, Mahmood, Warraich, & Rehman, 2021).

Table 3.1.2 Computer and Internet Self-efficacy of the Respondents when grouped by Sex

Computer/ internet self-efficacy		Male		Female		t-value	p-value
		Mean	DI	Mean	DI		
1	I feel confident in performing the basic functions of Microsoft office programs (MS Word, Excel, Powerpoint, Publication)	3.333	VMR	2.902	MR	2.132	.046*
2	I feel confident in my knowledge and skills on how to manage software for online learning	3.267	VMR	2.797	MR	2.150	.033*
3	I feel confident in using the internet (Google, Yahoo, Chrome, Edge) to find or gather information for online learning	3.200	MR	3.008	MR	.896	.372
Average		3.267	VMR	2.902	MR	2.069	.050*

Legend: VMR-Very Much Ready; MR-Much Ready; *significant at .05 level

Presented in the foregoing table are the computer and internet self-efficacy of the respondents when grouped by sex. In general, it shows that there is an

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incomparable concordance of the respondents with the males to be better than those of their female counterparts. This together with indicators 1 and 2 posted significant results which led to the rejection of the null hypothesis which states that there is no significant difference on the computer and self-efficacy of the respondents when grouped by sex. The results of this current study supports that findings of Rafique, Mahmood, Warraich, and Rehman (2021) wherein they also computer/internet self-efficacy is significantly higher in males than female students.

Table 3.2.1 Self-directed Learning Readiness of the Respondents when grouped by Programs of Studies

Self-directed learning		BEEd		BSE		BTLEd		F-value	p-value
		Mean	DI	Mean	DI	Mean	DI		
1	I carry out my own study plan	2.604	MR	2.880	MR	2.771	MR	1.599	.409
2	I seek assistance when facing learning problems	2.811	MR	3.220	MR	2.971	MR	1.392	.252
3	I manage my time well	2.566	MR	2.480	R	2.714	MR	1.599	.206
4	I set-up my learning goals	2.868A	MR	2.880A	MR	3.171B	MR	3.124	.047*
5	I have higher expectations for my learning performance	2.698	MR	2.880	MR	2.771	MR	.760	.470
Average		2.709	MR	2.852	MR	2.880	MR	1.948	.147

Legend: MR-Much Ready; R-Ready; *significant at .05 level

Presented in the foregoing table is the self-directed learning of the respondents when grouped by programs of studies. It can be seen that the indicators are generally vouched as *much ready* across all programs of studies: indicators 1, 2, 4, and 5 are vouched as *much* ready across all programs, while indicator 3 is vouched variably by the respondents: *ready* by BSE while *much ready* by the BEEd and BTLEd.

The vouched general concordances of the respondents including indicators 1, 2, 3, and 5 posted comparable results while indicator 4 posted incomparable results: the BTLEd posted incomparably with those of the BEEd and BSE. In general, this study failed to reject the null hypothesis which states that there is no significant difference on the online learning readiness of the pre-service teachers when grouped by programs of studies.

Table 3.2.2 Self-directed Learning Readiness of the Respondents when grouped by Programs of Sex

Self-directed learning		Male		Female		t-value	p-value
		Mean	DI	Mean	DI		
1	I carry out my own study plan	3.000	MR	2.715	MR	1.547	.138
2	I seek assistance when facing learning problems	3.267	VMR	2.967	MR	1.297	.197
3	I manage my time well	2.600	MR	2.569	MR	.131	.896
4	I set-up my learning goals	3.200	MR	2.919	MR	1.328	.186
5	I have higher expectations for my learning performance	3.133	MR	2.707	MR	1.992	.048*
Average		3.040	MR	2.776	MR	1.626	.106

Legend: VMR-Very Much Ready; MR-Much Ready; *significant at .05 level

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Presented in the foregoing table is the self-directed learning readiness of the respondents when grouped by sex. In general, it shows that there is a comparable concordance of the respondents along their self-directed learning readiness. This together with indicators 1, 2, 3, and 4 posted insignificant results which led to the rejection of the null hypothesis which states that there is no significant difference on the computer and self-efficacy of the respondents when grouped by sex. However, a significant result is posted in indicator 5 with the males to be better than those of the female respondents do.

Table 3.3.1 Learner Control of the Respondents when grouped by Programs of Studies

Learner control		BEEd		BSE		BTLEd		F-value	p-value
		Mean	DI	Mean	DI	Mean	DI		
1	I can direct my own learning progress	2.623	MR	2.680	MR	2.714	MR	.188	.829
2	I disregard instant messages, chat, internet surfing, and the while doing online learning	2.472	R	2.440	R	2.629	MR	.678	.509
3	I repeat online instructional materials on the basis of my needs	2.698	MR	2.880	MR	2.943	MR	1.353	.262
Average		2.598	MR	2.667	MR	2.762	MR	.810	.447

Legend: MR-Much Ready; R-Ready

Presented in the foregoing table is the learning control of the respondents when grouped by programs of studies. It can be seen that the general learning control of the respondents including indicators 1 and 3 are vouched as *much ready* across all programs of studies while indicator 2 is vouched by the BTLEd with *much ready* while *ready* by those of the BSE and BEEd. Moreover, the F and p-values do not post significant differences on the vouched learning control of the respondents. Hence, the study failed to reject the null hypothesis particular to the learning control of the respondents with respect to their programs of studies. The findings of Rafique, Mahmood, Warraich, and Rehman (2021) supports the results of the current research which showed that Learner Control is not significantly different in Pakistani students when grouped by program studies they are enrolled.

Table 3.3.2 Learner Control of the Respondents when grouped by Sex

Learner control		Male		Female		t-value	p-value
		Mean	DI	Mean	DI		
1	I can direct my own learning progress	3.000	MR	2.626	MR	1.951	.053
2	I disregard instant messages, chat, internet surfing, and the while doing online learning	2.933	MR	2.477	R	2.899	.009*
3	I repeat online instructional materials on the basis of my needs	3.200	MR	2.780	MR	2.087	.039
Average		3.044	MR	2.618	MR	2.691	.008*

Legend: MR-Much Ready; R-Ready; *significant at .05 level

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Presented in the foregoing table is the learning control of the respondents when grouped by sex. In general, it shows that there is an incomparable concordance of the respondents with the males to be better than those of their female counterparts. This together with indicators 2 posted significant results which led to the rejection of the null hypothesis which states that there is no significant difference on the computer and self-efficacy of the respondents when grouped by sex. All other indicators posted insignificant results. In contrary to these findings is the result of the study of Rafique, Mahmood, Warraich, and Rehman (2021), showed that Learner Control is not significantly different in Pakistani students when grouped by sex.

Table 3.4.1 Motivation for Learning of the Respondents when grouped by Programs of Studies

Motivation for learning		BEEd		BSE		BTLEd		F-value	p-value
		Mean	DI	Mean	DI	Mean	DI		
1	I am open to new ideas	3.151	MR	3.400	VMR	3.371	VMR	1.670	.192
2	I have motivation to learn	3.283	VMR	3.280	VMR	3.371	VMR	.201	.818
3	I improve from my mistakes	3.321A	VMR	3.360A	VMR	3.543B	VMR	3.199	.044*
4	I like to share my ideas with my classmates	2.849	MR	3.200	MR	3.286	VMR	1.602	.205
Average		3.151	MR	3.310	VMR	3.393	VMR	.315	.730

Legend: VMR-Very Much Ready; MR-Much Ready; *significant at .05 level Cells with similar letters within rows are comparable; incomparable with different letter by Scheffe Test.

Presented in the foregoing table is the motivation for learning of the respondents when grouped by programs of studies. In general, the mean motivation of those of the BEEd is interpreted as *much ready* which is different from those of the BSE and BTLEd (*very much ready).* Albeit different, this posted insignificant results which suggest that this study failed to reject the null hypothesis stating that there is no significant difference on the motivation for learning of the respondents when grouped by programs of studies. Contrary to these findings, Rafique, Mahmood, Warraich, and Rehman (2021), showed that Motivation for Learning significantly different in Pakistani students when grouped by Program. On the other hand, indicator 3 yielded significant results with the BTLEd to be differing significantly with those of the BSE and BEEd albeit their vouched readiness is interpreted as *very much ready* (3.543 vs 3.321 and 3.360, respectively.

Table 3.4.2 Motivation for Learning of the Respondents when grouped by Sex

Motivation for learning		Male		Female		t-value	p-value
		Mean	DI	Mean	DI		
1	I am open to new ideas	3.600	VMR	3.260	VMR	1.670	.097
2	I have motivation to learn	3.667	VMR	3.260	VMR	2.857	.009*
3	I improve from my mistakes	3.600	VMR	3.366	VMR	1.247	.215
4	I like to share my ideas with my classmates	3.533	VMR	3.033	MR	2.059	.041*
Average		3.600	VMR	3.230	MR	2.928	.008*

Legend: VMR-Very Much Ready; MR-Much Ready; *significant at .05 level

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Presented in the foregoing table is the motivation for learning of the respondents when grouped by sex. In general, it shows that there is an incomparable concordance of the respondents with the males to be better than those of their female counterparts. This together with indicators 2 and 4 posted significant results which led to the rejection of the null hypothesis which states that there is no significant difference on the motivation for learning of the respondents when grouped by sex. All other indicators posted insignificant results. In contrary, the findings of Rafique, G.M., Mahmood, K., Warraich, N.F., and Rehman S.U. (2021), showed that Motivation for Learning is not significantly different in Pakistani students when grouped by sex.

Table 3.5.1 Online Learning Confidence of the Respondents when grouped by Programs of Studies

Online learning confidence		BEEd		BSE		BTLEd		F- value	p-value
		Mean	DI	Mean	DI	Mean	DI		
1	I feel confident in using online tools (email, discussion room) to effectively communicate with others	3.000	MR	3.120	MR	3.029	MR	.315	.730
2	I feel confident in expressing myself (emotions and humor) through text	2.755	MR	2.900	MR	3.000	MR	1.100	.336
3	I feel confident in posting questions in online discussion boards	2.226	R	2.620	MR	2.457	R	2.899	.059
Average		2.660	MR	2.880	MR	2.829	MR	1.499	.227

Legend: MR-Much Ready; R-Ready

Presented in the foregoing table is the online learning confidence of the respondents when grouped by programs of studies. It can be seen that the indicators are generally vouched as *much ready* across all programs of studies: indicators 1 and 2 are vouched as *much* ready across all programs, while indicator 3 is vouched variably by the respondents: *ready* with BEEd and BTLEd while *much ready* by the BSE. Albeit vouched variably in some instant, the F and p-values do not post significant differences on the vouched computer and internet self-efficacy of the respondents. Hence, the study failed to reject the null hypothesis particular to computer and internet self-efficacy of the respondents with respect to their programs of studies.Based from the findings of Landrum (2020),strong to moderate correlations exits between the number of online classes, LMS self-efficacy, confidence to learn online, time management control, and self-regulation learning strategies which suggests that the more confidence one is with the online platform and with learning online as well as perceiving online classes as useful, the more one uses the online platform and learns online.

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Table 3.5.2 Online Learning Confidence of the Respondents when grouped by Sex

Online learning confidence		Male		Female		t-value	p-value
		Mean	DI	Mean	DI		
1	I feel confident in using online tools (email, discussion room) to effectively communicate with others	3.400	VMR	3.008	MR	1.839	.068
2	I feel confident in expressing myself (emotions and humor) through text	3.133	MR	2.837	MR	1.389	.167
3	I feel confident in posting questions in online discussion boards	3.067	MR	2.350	R	3.207	.002*
Average		3.200	MR	2.732	MR	2.605	.010*

Legend: VMR-Very Much Ready; MR-Much Ready; R-Ready; *significant at .05 level

Presented in the foregoing table is the online learning confidence of the respondents when grouped by sex. In general, it shows that there is an incomparable concordance of the respondents with the males to be better than those of their female counterparts. This together with indicator 3 posted significant results which led to the rejection of the null hypothesis which states that there is no significant difference on the computer and self-efficacy of the respondents when grouped by sex. All other indicators posted insignificant results. Satisfaction with the online platform was higher for students who indicated increased confidence in learning online and in using online learning techniques. In addition, students who are comfortable with their capacity to study online and who possess the abilities needed to put this ability into practice are more satisfied with the LMS platform (Landrum, 2020; Bautista, 2012).

3.4 Innovativeness, self-efficacy, and online learning readiness of the pre-service teachers

Hypothesis 4. There is no significant relationship between and among the innovativeness, self-efficacy, and online learning readiness of the pre-service teachers

Table 4. Relationship between and among the Innovativeness, Self-efficacy, and Online Learning Readiness of the Respondents

		Innov Index	Self-efficacy	Comp/ Internet self-efficacy	Self-directed learning	Learner control	Motivation for learning	Online learning Confidence
Innov Index	Pearson r correlation	-	.291	.330	.392	.347	.351	.250
	Sig	-	.001**	.000**	.000**	.000**	.000**	.003**
Self-efficacy	Pearson r correlation	.291	-	.348	.476	.433	.410	.297
	Sig	.001**	-	.000**	.000**	.000**	.000**	.000**

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Presented in Table 4 is the test of relationship between and among the innovativeness, self-efficacy, and online learning readiness of the respondents: Innovativeness is significantly related to self-efficacy (p-value of .001); innovativeness and self-efficacy are significantly related to computer and internet self-efficacy, self-directed learning, learner control, motivation for learning, and online learning confidence (p-values of <.001, <.001, <.001, <.001, <.001, and .003; and <.001, <.001, <.001, <.001, and <.001, respectively. Hence, the null hypothesis, which states that innovation, self-efficacy, and online learning readiness are not related to each other, is hereby rejected. Supporting these findings, the study of Bubou, G.M. (2022) revealed that individual innovation, self-efficacy, and readiness for e-learning of students in Yenagoa Study Centre are significantly correlated. In addition, Rafique, G.M., Mahmood, K., Warraich, N.F. and Rehman S.U. (2021) also showed that significant difference exists in students' readiness towards their computer, internet, and online communication self-efficacy and learning motivation.

The results imply that innovativeness complement self-efficacy. Corollary to this are the link of relationship of both innovativeness and self-efficacy to their online learning readiness. The study of Ahmad & Salim (2021) concluded that individual innovativeness, self-efficacy, and online learning readiness are interrelated concepts which are verified in this study to be true. Moreover, the studies of Bautista et al. (2018) and Bautista et al. (2021) suggested that the innovativeness of learners is coined to factors that are usually internal factors. In the current study, the internal factors that are attributed to their innovation are their motivation and self-directed drives making them efficacious in the tasks that they do. Moreover, the study of Tabang and Caballes (2022) concluded that learners of today particularly during the pandemic are in their stride of adopting to the realms of the pandemic which require their readiness and capacity to innovate things relative to the booming complexity of this pandemic education. Similarly, the study of Herguner et al. (2020) concluded that learners' attitudes posted beneficial effects on their online learning readiness which can result into an efficacious online learning.

4. CONCLUSIONS AND FUTURE WORKS

Based on the objectives and findings of the study, the following are drawn:

1. Majority of the respondents are in the stage of *early majority* in terms of their innovativeness;
2. Majority of the respondents have *very high* self-efficacy;
3. The respondents are *much ready* to go online; the innovativeness, self-efficacy, and online learning readiness of the respondents are comparable when grouped by their sexes and programs of studies; and
4. Innovativeness and self-efficacy are very highly significant related to the respondents' online learning readiness.

The results found in this study imply that the respondents are more than ready to go online; hence, online learning modalities may be institutionalized in the locale of the study especially in the now-normal of education on top of the objective of bringing-out innovation and self-efficacy among the pre-service teachers.

Aptly, academic planners may consider including facets of metaverse in the curricular inclusions toenrich and diversifying learning experiences and engagements of students. Researchers and educationists from around the world believe that metaverse is becoming a world phenomenon in the education sector and is also believed to be the future of education particularly in the Disruptive, Vulnerable, Uncertain, Complex, Ambiguous, and Diverse (D,VUCAD) educational world.

Anent thereto, CTE may start introducing the basics of the virtual world as a prelude to the epoch of metaverse in education, i.e., doing courses in the LMS through the QSU e-aral, computer simulated courses like virtual laboratories, computer mediated instructions, among other. Moreover, efficacy of the aforementioned academic milieus may be considered as points for inquiry among the researches of students in CTE.

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