# Analysis on the Effect of Digital Literacy, Innovative Behavior, Culture, and Interpersonal Communication on Teachers Performance at DLSU-D Through SEM

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## Abstract

Assessing a teacher's performance may involve examining how much they have achieved the necessary competencies. Professional competence, personality competence, pedagogical competence, and social competence comprise the four competencies a teacher should have. Teacher performance has an important role in improving the quality of education through their knowledge and efforts. Teachers' performance is affected by numerous variables. This study aims to analyze the effect of digital literacy, innovative behavior, culture, and interpersonal communication on teachers' performance at De La Salle University Dasmariñas. The statistical survey methodology was employed in this study to substantiate its findings. This study was conducted at De La Salle University-Dasmariñas (DLSU-D) in Cavite, for the undergraduate college teachers only. The university comprises of almost 534 undergraduate college teachers from nine departments, 248 participated in the study. The study used the Partial Least Squares - Structural Equation Model (PLS-SEM) to derive the latent variable values to analyze the effect of digital literacy, innovative behavior, culture, and interpersonal communication on teachers' performance, and to determine the relationship of these variables. Furthermore, to construct a structural model to help management to improve teachers' performance. The study introduced nine hypotheses which has generated several significant discoveries. These findings are consistent with prior research, demonstrating beneficial impact of digital literacy and innovative behavior to teachers' performance. Based on the results, digital literacy, innovative behavior, interpersonal communication, and teachers' performance have a positive relationship with each other.

*Keywords:* digital literacy, innovative behavior, culture, interpersonal communication, teachers performance, structural equation modeling

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## Introduction

Teacher's performance assessment may involve examining how much they have achieved the necessary competencies. Professional competence, personality competence, pedagogical competence, and social competence comprise the four competencies a teacher should have (Ishak & Suyatno, 2020). Examining teacher performance is captivating despite its longstanding presence in educational research (Dewanto et al., 2024). Several educational academics have previously investigated the issue of teacher performance (Mailool et al., 2020). Teacher performance has an important role in improving the quality of education through their knowledge and efforts. Therefore, the topic of teacher performance has been a significant focus of research for educational academics up to the present time (Dewanto et al., 2024).

In recent decades, with the rapid increase in technological development and advancements, the digitalization of society has abruptly change (Travkina, 2022). As the effect of this technological advancement in every aspect of the society is observed, the result of digitalization in life and education is inevitable. Education is one of the major contributors in a nation's progress. It has a crucial role in the advancement of a country (Jahantab, 2021). The process of digitalization in education has been on its way for a long time (Arisoy, 2022). The onset of novel coronavirus disease 2019 or Covid-19 pandemic during a period of temporary communication restrictions has arisen a strong surge of interest to a completely remote format of interaction between all participants in educational process (Chertoff et al., 2020).

Digitalization has affected all levels of education, and directly the activities of students, teachers, administrators, and stake holders. The current advancements in information technologies have facilitated transparency in implementing educational methods in schools. The availability of this information enhances the ease of monitoring teacher performance (Howard et al., 2019). To address teacher performance issues, all school leaders must exert significant effort. Teacher performance encompasses teachers' measurable actions and behaviors that contribute to attaining school or organizational objectives (Wahab et al., 2020).

Furthermore, to enhance the caliber of education, teachers need to possess a dependable and enduring comprehension of digital literacy (Dewanto et al., 2024). The teacher's lack of comprehension of digital literacy may adversely affect the learning process and academic achievement as stipulated by the school curriculum (Afriliandhi et al., 2022).

De La Salle University-Dasmariñas, like other universities elsewhere in the Philippines and the world, have been experiencing a set of important changes induced by technological innovations and social trends towards digitalization. Nevertheless, in spite of these perceived barriers, institution like De La Salle University-Dasmariñas have adapted the e-learning strategy through the e-class embedded in its school book design (Rocina, 2017). Similarly, the digitalization revolution involves an intense readjustment in all sectors of education. Currently, the adoption of technologies by universities is related to a paradigm shift, where technology and advancement is conceived as a complex and interconnected environment that enables digital learning (Rodney, 2020).

De La Salle University-Dasmariñas, also referred to by its acronym DLSU-D or La Salle-Dasma, is a private Roman Catholic, Lasallian co-educational secondary and higher education institution run by the De La Salle Brothers of the Philippine District of the Christian Brothers in Dasmariñas City, Cavite, Philippines. It is a member of De La Salle Philippines, a network of 16 Lasallian educational institutions. Studies and research pertaining to the effect of digital

literacy, innovative work behavior, culture, and interpersonal communication on teachers' performance is not yet undertaken in the university.

## Research Goals and Objectives

This study aims to analyze the effect of digital literacy, innovative behavior, culture, and interpersonal communication on teachers' performance at De La Salle University Dasmariñas using Structural Equation Modeling (SEM). It also intends to address the gaps of the teachers in relation to the constructs mention. This research aims to answer the following questions:

1. What are the significant factors that affects teachers' performance at De La Salle University Dasmariñas that covers digital literacy, innovative behavior, culture, and interpersonal communication;
2. What is the impact of these significant factors that affects teachers' performance at De La Salle University Dasmariñas in terms of digital literacy, innovative behavior, culture, and interpersonal communication; and
3. In what ways can this research study help faculty management at De La Salle University Dasmariñas improve teachers' performance.

## Hypotheses of the Study

This research will combine digital literacy, innovative behavior or attitudes, culture, interpersonal communication, and teacher performance into single research. The researcher aims to examine the impact of digital literacy, innovative behavior, culture, and interpersonal communication on teacher's performance at De La Salle University Dasmariñas.

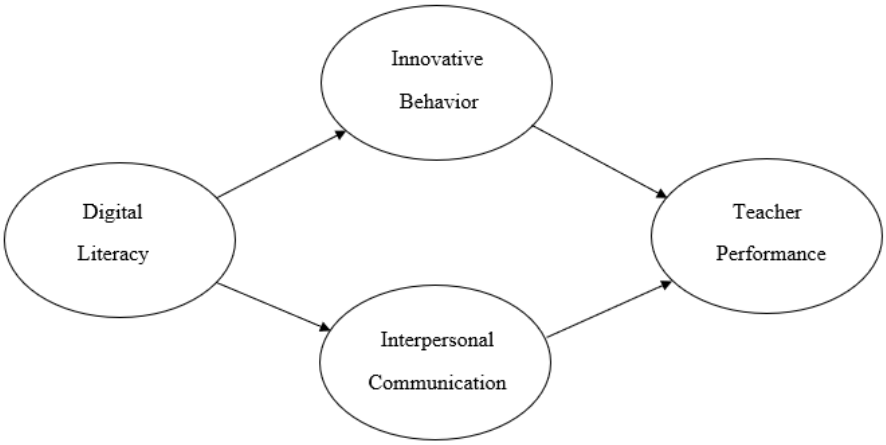
The researcher formulated the following hypotheses based on the statement of the problem and objectives of the study.

H1: Digital literacy and innovative behavior have a positive correlation
H2: Digital literacy and interpersonal communication have a positive correlation
H3: Digital literacy and teachers' performance have a positive correlation
H4: Culture and innovative behavior have a positive correlation
H5: Culture and interpersonal communication have a positive correlation
H6: Culture and teachers' performance have a positive correlation
H7: Culture and digital literacy have a positive correlation
H8: Innovative behavior and teachers' performance have a positive correlation
H9: Interpersonal communication and teachers' performance have a positive correlation

## Literature Review

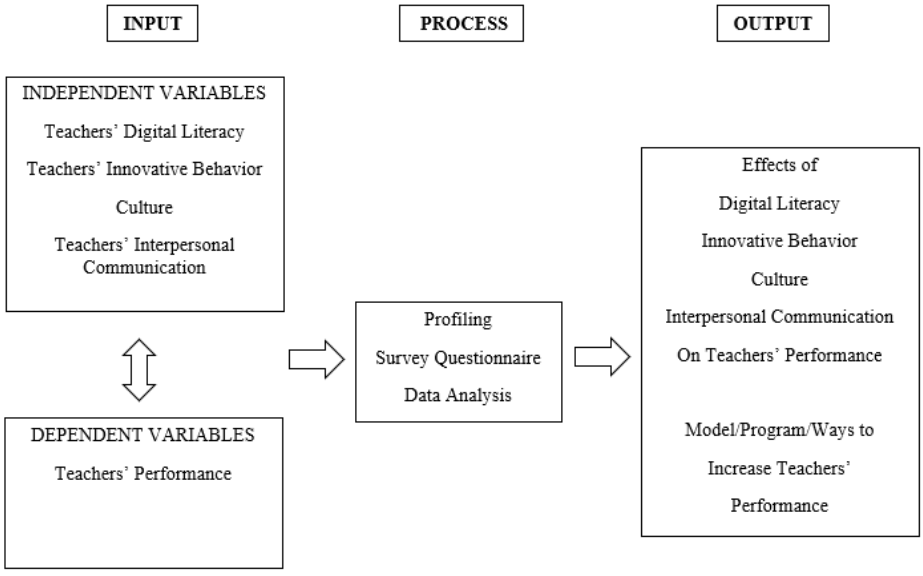
The theoretical framework of the study is based on the previous study regarding the effect of digital literacy, innovative attitudes, and interpersonal communication on teacher performance (Dewanto et al., 2024). According to the prior findings and discussion, the research uncovered four noteworthy and statistically significant discoveries. One is that a direct relationship exists between digital literacy and innovative mindsets. A direct relationship exists between innovative mindsets and teacher performance. A direct relationship exists between digital literacy and interpersonal communication. Interpersonal communication and teacher performance exhibit a positive association (Dewanto et al., 2024).

**Figure 1**
*Theoretical Framework*



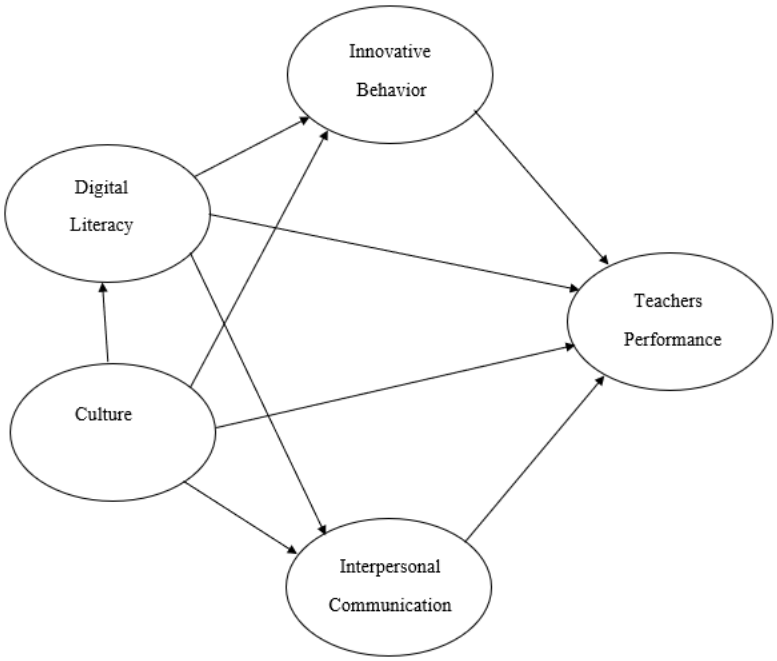

The conceptual framework of the study is represented as an IPO (Input – Process - Output) method. The inputs are the dependent and the independent variables. The independent variables are the teachers' digital literacy, innovative behavior, culture, and interpersonal communication while the dependent variable is the teachers' performance. Culture was added in the current study.

**Figure 2**
*Conceptual Framework*




Intervening variables which are not represented are the faculty age, gender, educational attainment, and years in teaching, and the type of faculty. Processes include profiling, survey questionnaire, and data analysis. The desired output is the analysis of the effects of digital literacy, innovative behavior, culture, and interpersonal communication on teachers' performance. Furthermore, the study will help faculty management to develop program, or ways to improve teachers' performance. The study will revolve around this framework that serves as the researcher's guide.

**Figure 3**
*Conceptual Paradigm*




## Methodology

This study will employ a cross-sectional study descriptive research design using statistical survey approach to ensure the accuracy of its results. The researcher will use the Partial Least Squares-Structural Equation Model (PLS-SEM) to generate predictions and to determine the values of the hidden variables. Descriptive research is a quantitative research method that attempts to collect quantifiable information to be used for statistical analysis of the population sample. The collected and analyzed data from the descriptive research can then be further studied using different research techniques and computer software.

## Data Gathering Procedure

The researcher will use university records, online data, and publications as a basis for the preliminary data required in the research study. Respondents will be composed of the faculties of the selected university. Sample size will be determined from the total population of all faculties of the university using the Slovin's formula. Based on the information provided by the university, the total population of the intended respondents is 534, using the Slovin's formula with a 5% error tolerance level, the number of adequate samples are 228.

Survey method using Google Forms will be used in data gathering. In survey research, respondents will answer through survey or questionnaires, or polls. Permission in conducting the survey will be obtained from the selected university in-charged personnel. Consent of the respondents will be asked before any survey should be done and assurance of confidentiality will also be explained to them. A letter requesting consent or approval for employee participation will also be presented before starting the survey. Participation in the survey is voluntary and based on the faculty or administrator ability to give informed consent. All the questionnaires and interview or survey forms that will be used in data collection will be treated as confidential and will be placed in a secured or locked file storage.

## Data Analysis and Results

Table 1 shows the demographics of the respondents. Two hundred forty-eight (248) faculty took part in the study and are currently employed at De La Salle University Dasmariñas. Participants are composed of undergraduate faculty both full time and part time.

**Table 1**
*Respondent Profile*

| Indicator | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| | | Age | | |
| 23 to 30 years old | 24 | 9.7% | 9.7% | 9.7% |
| 31 to 40 years old | 77 | 31.1% | 31.1% | 40.8% |
| 41 to 50 years old | 104 | 41.9% | 41.9% | 82.7% |
| above 50 years old | 43 | 17.3% | 17.3% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Gender | | |
| Male | 134 | 54.0% | 54.0% | 54.0% |
| Female | 114 | 46.0% | 46.0% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Civil Status | | |
| Single | 83 | 33.5% | 33.5% | 33.5% |
| Married | 165 | 66.5% | 66.5% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Degree | | |
| Bachelor | 43 | 17.3% | 17.3% | 17.3% |
| Masteral | 157 | 63.3% | 63.3% | 80.6% |
| Doctoral | 48 | 19.4% | 19.4% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Years in Teaching | | |
| less than 10 years | 46 | 18.5% | 18.5% | 18.5% |
| 10 - 20 years | 77 | 31.1% | 31.1% | 49.6% |
| 21 - 30 years | 125 | 50.4% | 50.4% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Faculty Appointment | | |
| Full time | 120 | 48.4% | 48.4% | 48.4% |
| Part time | 128 | 51.6% | 51.6% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |
| | | Have other duties outside university | | |
| Yes | 133 | 53.6% | 53.6% | 53.6% |
| No | 115 | 46.4% | 46.4% | 100.0% |
| Total | 248 | 100.0% | 100.0% | |

## Statistical Description and Assessment of Normality

The survey question exclusively provides information in numerical format. Table 2 displays various normality measures and descriptive data for each item-level construct, including skewness, kurtosis, standard deviation, and mean.

The values for asymmetry and kurtosis between -2 and +2 are considered acceptable to prove normal univariate distribution (George & Mallery, 2024). Hair et al. (2019) argued that data is normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. If the skewness statistic

is less than 2 and the kurtosis statistic is less than 7, then the data is considered to have a normal distribution (Curran et al., 1996).

**Table 2**

*Statistical Description and Assessment of Normality*

| Construct | Item | Sub-Item | Mean | Median | Min | Max | Standard deviation | Excess kurtosis | Skewness |
|---|---|---|---|---|---|---|---|---|---|
| DL | DL1 | DL11 | 3.363 | 4 | 2 | 5 | 0.841 | -1.099 | -0.688 |
| | | DL12 | 3.625 | 4 | 2 | 5 | 1.028 | -0.958 | -0.474 |
| | | DL13 | 2.992 | 3 | 1 | 5 | 1.181 | -0.831 | -0.797 |
| | DL2 | DL21 | 3.105 | 4 | 1 | 5 | 1.217 | -0.757 | -0.931 |
| | | DL22 | 3.569 | 4 | 2 | 5 | 0.519 | -1.314 | -0.191 |
| | | DL23 | 2.988 | 4 | 1 | 5 | 1.243 | -1.202 | -0.662 |
| | DL3 | DL31 | 3.032 | 4 | 1 | 5 | 1.208 | -1.105 | -0.698 |
| | | DL32 | 3.028 | 4 | 1 | 5 | 1.259 | -1.187 | -0.737 |
| | | DL33 | 3.923 | 4 | 2 | 5 | 0.86 | 0.037 | -0.693 |
| | DL4 | DL41 | 4.032 | 4 | 2 | 5 | 0.665 | -0.464 | -0.119 |
| | | DL42 | 3.141 | 4 | 1 | 5 | 1.238 | -0.72 | -0.951 |
| | | DL43 | 3.109 | 4 | 1 | 5 | 1.208 | -0.717 | -0.942 |
| | DL5 | DL51 | 2.968 | 4 | 1 | 5 | 1.341 | -1.376 | -0.668 |
| | | DL52 | 2.935 | 4 | 1 | 4 | 1.351 | -1.462 | -0.651 |
| | | DL53 | 3.194 | 4 | 1 | 5 | 1.071 | -0.895 | -0.769 |
| IB | IB1 | IB11 | 3.254 | 3 | 2 | 4 | 0.606 | -0.552 | -0.19 |
| | | IB12 | 3.573 | 4 | 2 | 4 | 0.656 | 0.356 | -1.263 |
| | | IB13 | 3.524 | 3 | 2 | 5 | 0.889 | -0.765 | 0.325 |
| | IB2 | IB21 | 3.363 | 3 | 2 | 5 | 0.646 | -0.513 | -0.337 |
| | | IB22 | 3.339 | 3 | 2 | 5 | 0.627 | -0.563 | -0.308 |
| | | IB23 | 3.117 | 3 | 2 | 5 | 0.865 | -1.5 | -0.154 |
| | IB3 | IB31 | 3.351 | 4 | 2 | 5 | 0.93 | -1.368 | -0.663 |
| | | IB32 | 3.351 | 4 | 2 | 5 | 0.926 | -1.336 | -0.631 |
| | | IB33 | 3.343 | 4 | 2 | 5 | 0.937 | -1.427 | -0.675 |
| | IB4 | IB41 | 3.262 | 3 | 2 | 5 | 1.074 | -1.122 | 0.366 |
| | | IB42 | 3.565 | 4 | 2 | 5 | 1.098 | -1.226 | -0.432 |
| | | IB43 | 3.512 | 3 | 2 | 5 | 1.248 | -1.637 | 0.06 |
| | IB5 | IB51 | 3.153 | 3 | 2 | 5 | 0.88 | -1.48 | -0.198 |
| | | IB52 | 3.359 | 4 | 2 | 5 | 0.927 | -1.378 | -0.743 |
| | | IB53 | 3.621 | 4 | 2 | 5 | 1.182 | -1.392 | -0.38 |
| C | C1 | C11 | 4.363 | 5 | 3 | 5 | 0.831 | -1.126 | -0.766 |
| | | C12 | 4.492 | 5 | 3 | 5 | 0.516 | -1.565 | -0.145 |
| | | C13 | 3.968 | 4 | 2 | 5 | 0.718 | -0.881 | -0.018 |
| | C2 | C21 | 4.185 | 4 | 3 | 5 | 0.787 | -1.313 | -0.342 |
| | | C22 | 4.508 | 5 | 3 | 5 | 0.516 | -1.543 | -0.21 |
| | | C23 | 4.504 | 5 | 3 | 5 | 0.516 | -1.549 | -0.194 |
| | C3 | C31 | 4.617 | 5 | 3 | 5 | 0.494 | -1.409 | -0.585 |
| | | C32 | 4.339 | 4 | 3 | 5 | 0.49 | -1.254 | 0.478 |
| | | C33 | 4.593 | 5 | 3 | 5 | 0.499 | -1.534 | -0.477 |
| | C4 | C41 | 4.165 | 4 | 2 | 5 | 0.809 | 1.814 | -1.277 |
| | | C42 | 4.504 | 5 | 3 | 5 | 0.516 | -1.549 | -0.194 |
| | | C43 | 3.968 | 4 | 3 | 5 | 0.659 | -0.69 | 0.034 |
| | C5 | C51 | 4.331 | 4 | 3 | 5 | 0.495 | -1.099 | 0.421 |
| | | C52 | 4.25 | 4 | 3 | 5 | 0.442 | -0.552 | 1.02 |
| | | C53 | 4.153 | 4 | 3 | 5 | 0.554 | 0.009 | 0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IC | IC1 | IC11 | 3.899 | 4 | 2 | 5 | 1.126 | -0.829 | -0.755 |
| | | IC12 | 4.581 | 5 | 3 | 5 | 0.51 | -1.305 | -0.512 |
| | | IC13 | 4.573 | 5 | 3 | 5 | 0.503 | -1.616 | -0.391 |
| | IC2 | IC21 | 4.81 | 5 | 2 | 5 | 0.484 | 10.632 | -3.016 |
| | | IC22 | 4.806 | 5 | 2 | 5 | 0.47 | 7.986 | -2.679 |
| | | IC23 | 4.798 | 5 | 2 | 5 | 0.483 | 9.773 | -2.837 |
| | IC3 | IC31 | 4.536 | 5 | 2 | 5 | 0.56 | 0.493 | -0.838 |
| | | IC32 | 4.794 | 5 | 2 | 5 | 0.477 | 7.13 | -2.535 |
| | | IC33 | 4.141 | 5 | 2 | 5 | 1.1 | -1.139 | -0.703 |
| | IC4 | IC41 | 4.552 | 5 | 3 | 5 | 0.652 | 0.167 | -1.163 |
| | | IC42 | 4.569 | 5 | 3 | 5 | 0.503 | -1.63 | -0.374 |
| | | IC43 | 4.488 | 5 | 3 | 5 | 0.66 | -0.275 | -0.93 |
| | IC5 | IC51 | 4.718 | 5 | 3 | 5 | 0.468 | 0.066 | -1.209 |
| | | IC52 | 4.282 | 5 | 3 | 5 | 0.814 | -1.271 | -0.562 |
| | | IC53 | 4.75 | 5 | 3 | 5 | 0.442 | 0.093 | -1.302 |
| TP | TP1 | TP11 | 4.403 | 4 | 2 | 5 | 0.522 | -0.049 | -0.117 |
| | | TP12 | 4.448 | 4 | 2 | 5 | 0.521 | -0.145 | -0.219 |
| | | TP13 | 4.444 | 4 | 3 | 5 | 0.505 | -1.754 | 0.134 |
| | TP2 | TP21 | 4.448 | 4 | 3 | 5 | 0.505 | -1.759 | 0.118 |
| | | TP22 | 3.988 | 4 | 2 | 5 | 0.687 | -0.657 | -0.06 |
| | | TP23 | 4.46 | 4 | 3 | 5 | 0.514 | -1.58 | -0.016 |
| | TP3 | TP31 | 4.548 | 5 | 3 | 5 | 0.506 | -1.691 | -0.29 |
| | | TP32 | 4.399 | 4 | 3 | 5 | 0.506 | -1.498 | 0.226 |
| | | TP33 | 4.641 | 5 | 3 | 5 | 0.488 | -1.251 | -0.696 |
| | TP4 | TP41 | 4.472 | 4 | 2 | 5 | 0.531 | -0.045 | -0.376 |
| | | TP42 | 4.403 | 4 | 2 | 5 | 0.522 | -0.049 | -0.117 |
| | | TP43 | 4.347 | 4 | 2 | 5 | 0.654 | -0.244 | -0.591 |
| | TP5 | TP51 | 4.415 | 4 | 2 | 5 | 0.524 | -0.068 | -0.162 |
| | | TP52 | 4.254 | 4 | 2 | 5 | 0.864 | 1.607 | -1.386 |
| | | TP53 | 4.415 | 4 | 2 | 5 | 0.517 | -0.121 | -0.096 |
| | TP6 | TP61 | 4.444 | 4 | 3 | 5 | 0.505 | -1.754 | 0.134 |
| | | TP62 | 4.593 | 5 | 3 | 5 | 0.499 | -1.534 | -0.477 |
| | | TP63 | 4.488 | 5 | 3 | 5 | 0.654 | -0.279 | -0.914 |
| | TP7 | TP71 | 4.657 | 5 | 3 | 5 | 0.483 | -1.125 | -0.774 |
| | | TP72 | 4.649 | 5 | 3 | 5 | 0.494 | -0.822 | -0.83 |
| | | TP73 | 4.621 | 5 | 3 | 5 | 0.501 | -1.058 | -0.694 |
| | TP8 | TP81 | 4.722 | 5 | 3 | 5 | 0.457 | -0.391 | -1.123 |
| | | TP82 | 4.722 | 5 | 3 | 5 | 0.457 | -0.391 | -1.123 |
| | | TP83 | 4.726 | 5 | 3 | 5 | 0.464 | 0.211 | -1.26 |
| | TP9 | TP91 | 4.375 | 4 | 3 | 5 | 0.501 | -1.422 | 0.325 |
| | | TP92 | 4.593 | 5 | 3 | 5 | 0.507 | -1.241 | -0.566 |
| | | TP93 | 4.577 | 5 | 3 | 5 | 0.502 | -1.601 | -0.408 |
| | TP10 | TP101 | 4.774 | 5 | 3 | 5 | 0.428 | 0.631 | -1.474 |
| | | TP102 | 4.585 | 5 | 3 | 5 | 0.501 | -1.569 | -0.442 |
| | | TP103 | 4.419 | 4 | 3 | 5 | 0.502 | -1.711 | 0.232 |

*Note.* DL: Digital Literacy; IB: Innovative Behavior; C: Culture; IC: Interpersonal Communication; TP: Teachers Performance

The descriptive statistics show that out of all the variables that make up the DL (Digital Literacy), the one with the lowest mean value is DL52, with a standard deviation of 1.351. On the other hand, DL41 has the highest mean value. DL22 has the most significant standard

deviation at 0.519. This means that faculty at De La Salle University Dasmariñas possess information and communication digital skills but lacking in problem solving digital skills.

For IB (Innovative Behavior), IB53 have the highest mean value of 3.621, and 1.182 values of standard deviation. IB23 have the lowest mean value at 3.117. Faculty can promote and sustain innovative ideas, while suggesting improvements on expressed ideas are rarely overlooked.

Regarding C (Culture), C13 and C43 has the lowest mean value at 3.968, while C31 has the highest at 4.617. Provision of adequate resources and training for addressing cultural diversity, and experiences in teaching methods and curriculum has the lowest mean. C52 has the most significant standard deviation at 0.442. Teachers feel respected and valued by the administration and other staff members at De La Salle University Dasmariñas.

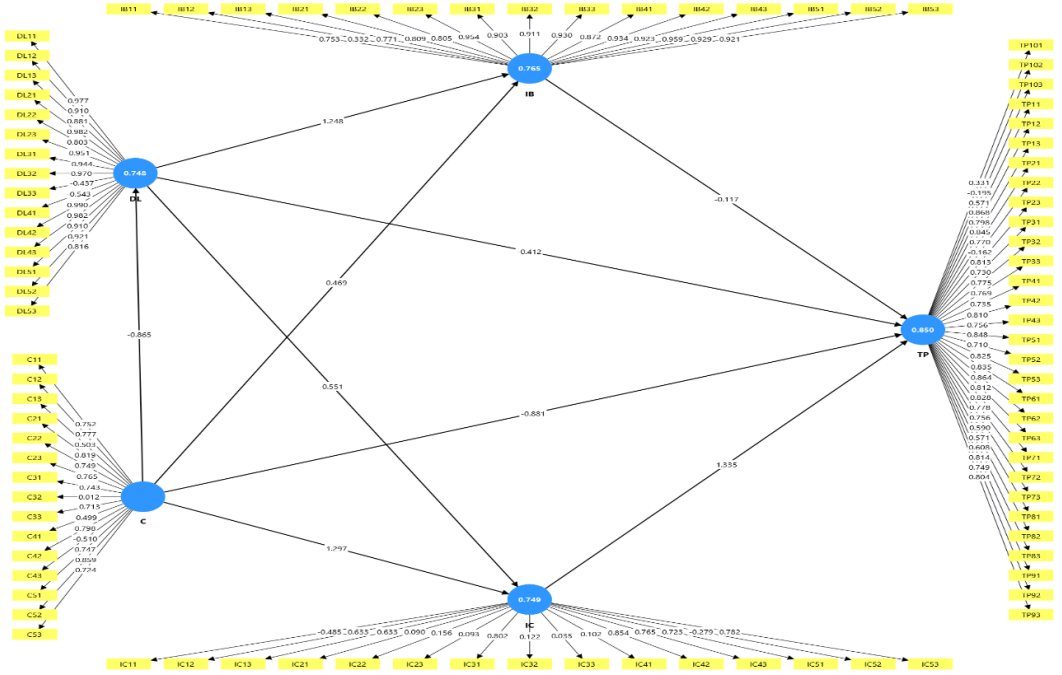
With the highest mean value and lowest value of standard deviation at 4.806 and 0.47 respectively, IC22 displays the most uniform distribution out of the variables that make up the IC (Interpersonal Communication). Respect with everyone is the most important factor in communication amongst the faculty. IC11 which focuses on dimension of expression and collaboration has the lowest mean value.

For TP (Teachers Performance), TP22 has the lowest mean value of 3.988, with a significant value of standard deviation at 0.687. Incorporating digital innovations in lesson plan of the faculty can improve both the quantity and quality of student learning. TP101 has the highest mean value at 4.774. Ensuring proper attire and good grooming before and after classes is one of the important factors in teachers self-reflection.

## Measurement Model (Outer Model): Validity and Reliability

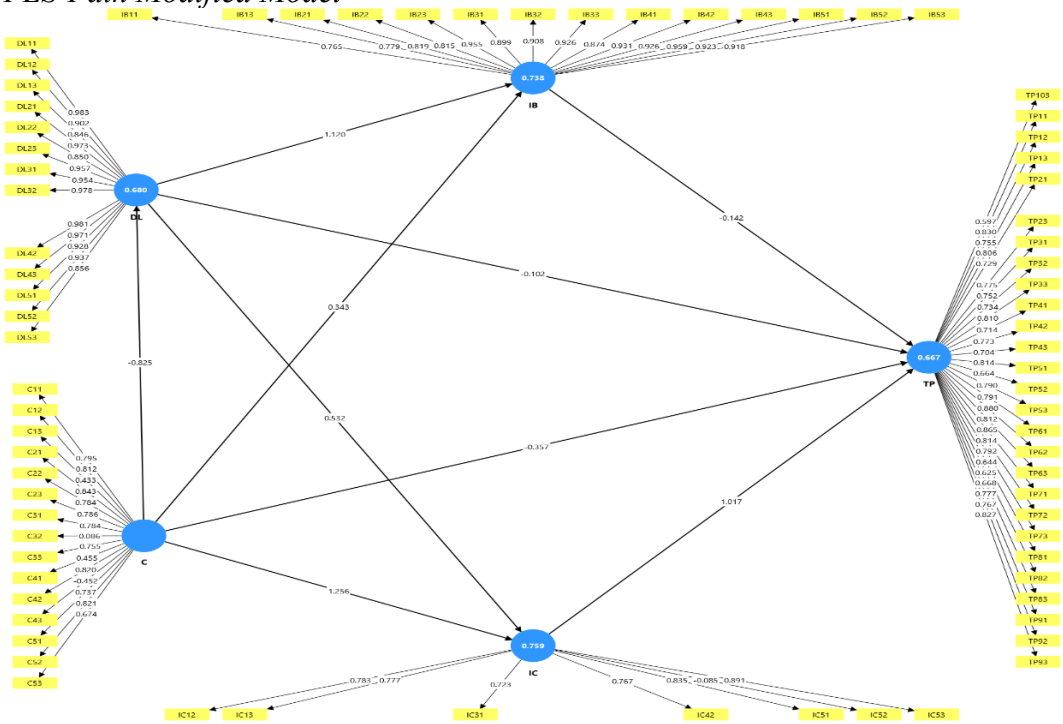
Concurrent and convergent forms of validity will be identified thru the measurement model. Convergent validity describes the degree to which indicators of the latent construct correlate with each other and perfectly embody the construct they are meant for. Convergent validity is assessed using three indices: outer (peripheral) loadings, average variance extracted (AVE), and composite reliability (CR) (Hair et al., 2019). They suggest that the value of AVE and outer loadings should be greater than 0.500 and 0.708 respectively for each of the constructs, and likewise CR should be above 0.7.

**Figure 4**
*PLS-Path Initial Model*



On Figure 4, path initial model, outer loadings for indicators DL33, DL41, IB12, IC11, IC21, IC22, IC23, IC32, IC33, IC41, IC52, C32, C41, C43, TP22, TP101, and TP102 falls below the significant threshold of 0.500 at 0.05 significance level, and they are excluded in the study.

**Figure 5**
*PLS-Path Modified Model*



On Figure 5, path first modified model, outer loadings for indicators C13, C32, C41, C43 and IC52 falls below the significant threshold of 0.500 at 0.05 significance level, and they are excluded in the study.

**Figure 6**
*PLS-Path Structural Model*

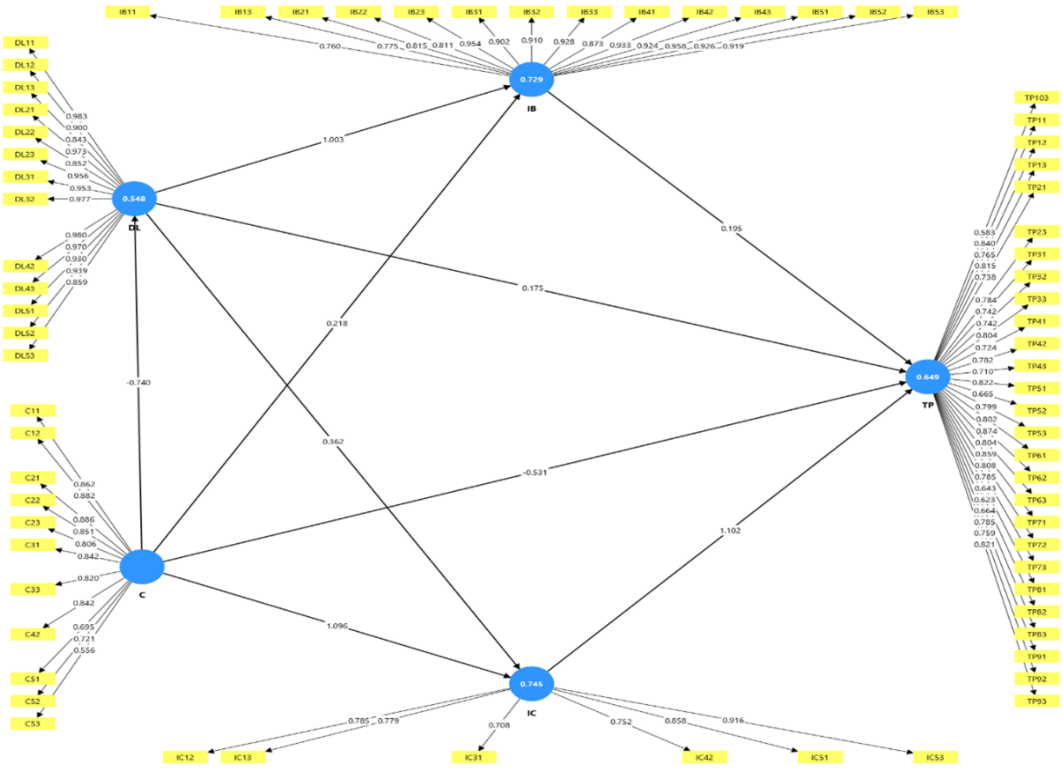



**Table 3**
*Convergent Validity*

| Construct | Item | Sub-Item | Outer Loading | Cronbach Alpha | CR | AVE |
|---|---|---|---|---|---|---|
| DL | DL1 | DL11 | 0.983 | 0.987 | 0.989 | 0.871 |
| | | DL12 | 0.9 | | | |
| | | DL13 | 0.843 | | | |
| | DL2 | DL21 | 0.973 | | | |
| | | DL22 | 0.852 | | | |
| | | DL23 | 0.956 | | | |
| | DL3 | DL31 | 0.953 | | | |
| | | DL32 | 0.977 | | | |
| | DL4 | DL42 | 0.98 | | | |
| | | DL43 | 0.97 | | | |
| | DL5 | DL51 | 0.93 | | | |
| | | DL52 | 0.939 | | | |
| | | DL53 | 0.859 | | | |
| IB | IB1 | IB11 | 0.76 | 0.979 | 0.981 | 0.787 |
| | | IB13 | 0.775 | | | |
| | IB2 | IB21 | 0.815 | | | |
| | | IB22 | 0.811 | | | |
| | | IB23 | 0.954 | | | |
| | IB3 | IB31 | 0.902 | | | |
| | | IB32 | 0.91 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **IB33** | 0.928 | | | |
| | **IB4** | **IB41** | 0.873 | | | |
| | | **IB42** | 0.933 | | | |
| | | **IB43** | 0.924 | | | |
| | **IB5** | **IB51** | 0.958 | | | |
| | | **IB52** | 0.926 | | | |
| | | **IB53** | 0.919 | | | |
| C | **C1** | **C11** | 0.862 | 0.943 | 0.951 | 0.644 |
| | | **C12** | 0.882 | | | |
| | **C2** | **C21** | 0.886 | | | |
| | | **C22** | 0.851 | | | |
| | | **C23** | 0.806 | | | |
| | **C3** | **C31** | 0.842 | | | |
| | | **C33** | 0.82 | | | |
| | **C4** | **C42** | 0.842 | | | |
| | **C5** | **C51** | 0.695 | | | |
| | | **C52** | 0.721 | | | |
| | | **C53** | 0.556 | | | |
| IC | **IC1** | **IC12** | 0.785 | 0.887 | 0.915 | 0.644 |
| | | **IC13** | 0.779 | | | |
| | **IC3** | **IC31** | 0.708 | | | |
| | **IC4** | **IC42** | 0.752 | | | |
| | **IC5** | **IC51** | 0.858 | | | |
| | | **IC53** | 0.916 | | | |
| TP | **TP1** | **TP11** | 0.583 | 0.973 | 0.974 | 0.584 |
| | | **TP12** | 0.84 | | | |
| | | **TP13** | 0.765 | | | |
| | **TP2** | **TP21** | 0.815 | | | |
| | | **TP23** | 0.738 | | | |
| | **TP3** | **TP31** | 0.784 | | | |
| | | **TP32** | 0.742 | | | |
| | | **TP33** | 0.742 | | | |
| | **TP4** | **TP41** | 0.804 | | | |
| | | **TP42** | 0.724 | | | |
| | | **TP43** | 0.782 | | | |
| | **TP5** | **TP51** | 0.71 | | | |
| | | **TP52** | 0.822 | | | |
| | | **TP53** | 0.665 | | | |
| | **TP6** | **TP61** | 0.799 | | | |
| | | **TP62** | 0.802 | | | |
| | | **TP63** | 0.874 | | | |
| | **TP7** | **TP71** | 0.804 | | | |
| | | **TP72** | 0.859 | | | |
| | | **TP73** | 0.808 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | TP8 | TP81 | 0.785 | | | |
| | | TP82 | 0.643 | | | |
| | | TP83 | 0.623 | | | |
| | TP9 | TP91 | 0.664 | | | |
| | | TP92 | 0.785 | | | |
| | | TP93 | 0.759 | | | |
| | TP10 | TP103 | 0.821 | | | |

Figure 6 and Table 3 shows that measurements are dependable. All the remaining outer loadings exceeded the significant threshold of 0.500 at 0.05 significance level shows that all individual items' measurement adds considerable significance to their studied constructs and sufficiently met the acceptable criterion set for individual item reliability (Adeleke et al., 2015). On the other hand, the results indicated that the average variance extracted (AVE) values, which varied between 0.584 and 0.871, surpassed the minimum requirement of 0.500 (Henseler et al., 2014). Cronbach's alpha and composite reliability (CR) are recommended to be higher than 0.7. Table 3 shows that all structures have Cronbach's alpha and CR values higher than the critical value of 0.70.

Cronbach's alpha and CR coefficient are frequently used index in organizational research in assessing the internal consistency of reliability of a scale, particularly those containing multiple items (McCrae et al., 2010). This study utilized a composite reliability coefficient for the assessment of internal consistency reliability. In this study, composite reliability (CR) as provided in Table 3 ranged from 0.915 to 0.989 for all the constructs which exceeded the minimum requirement of 0.7 (Hair et al., 2019), thereby validating the constructs' internal consistency and reliability.

Discriminant validity is the degree by which a latent construct differs from others in a model (Vinzi et al., 2009). The test's discriminatory power was initially assessed using the Fornell-Larcker Criterion. In the assessment of Fornell-Larcker criterion, it compares the square root of Average Variance Extracted (AVE) with the latent variable correlations. Specifically, the square root of each construct's AVE should be greater than its highest correlation with any other construct and only with this assessment the discriminant validity can be achieved (Afthanorhan et al., 2021). Table 4 shows the results for discriminant validity of the study. However, negative values are noticeable in some comparison.

**Table 4**

*Discriminant Validity: Fornell-Larcker Criterion*

| Construct | DL | IB | C | IC | TP |
|---|---|---|---|---|---|
| DL | | | | | |
| IB | 0.815 | | | | |
| C | 0.752 | 0.533 | | | |
| IC | 0.487 | 0.408 | 0.850 | | |
| TP | 0.450 | 0.352 | 0.600 | 0.778 | |

Recent research suggest that Fornell & Larcker criterion is not effective under certain circumstances in PLS method and therefore Roemer et al. (2021) offered Hetetrotrait-Monotrait (HTMT) approach to replace Fornell & Larcker criterion.

To examine this, the Heterotrait-Monotrait Ratio (HTMT) which was recommended by Roemer et al. (2021) as an alternative to Fornell and Larcker's method has been applied. The HTMT is advocated to be a superior boundary measure for assessing discriminant validity. As an evaluation for factor correlation, the HTMT should be considerably smaller than 1 (ideally < 0.850) to distinguish between two factors (Hair et al., 2019).

**Table 5**

*Discriminant Validity: Heterotrait-Monotrait Ratio (HTMT)*

| Construct | DL | IB | C | IC | TP |
|---|---|---|---|---|---|
| DL | | | | | |
| IB | 0.815 | | | | |
| C | 0.752 | 0.533 | | | |
| IC | 0.487 | 0.408 | 0.850 | | |
| TP | 0.450 | 0.352 | 0.600 | 0.778 | |

From Table 5, the results show a range between 0.352 and 0.850 which drop beneath the threshold level of 0.90, thus implying all constructs are independent of each other and that the benchmark for discriminant validity have been met.

In conclusion, convergent and discriminant validity evaluations show that the constructs are adequately valid and reliable in the study model.

## Structural Model: Examination of the Impact of Interaction

The objective of structural model evaluations is to verify hypotheses concerning the statistical significance (t-values), the range of confidence intervals, and the relative significance (R2) of exogenous and endogenous variables. SmartPLS Bootstrapping method was utilized in the computation of T-values and standard errors. Two tailed tests at significance level of 0.05 was employed to ascertain results. In SmartPLS, a T-value greater than 1.96 (for a two-tailed test at a significance level of 0.05) is generally considered significant. Random subsamples of 5,000 was set and calculating the mean of the results.

**Table 6**

*Hypotheses Result*

| Hypothesis | Path | Strd. Beta | Strd. Error | T-Value | P-Value | Bias | Confidence Interval | | Decision |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Bias | Corrected | |
| H1 | DL->IB | 1.003 | 0.033 | 30.629 | 0.000 | 0.000 | 0.939 | 1.068 | ACCEPTED |
| H2 | DL->IC | 0.362 | 0.045 | 8.017 | 0.000 | 0.003 | 0.274 | 0.450 | ACCEPTED |
| H3 | DL->TP | 0.175 | 0.091 | 2.135 | 0.000 | 0.009 | 0.050 | 0.330 | ACCEPTED |
| H4 | C->IB | 0.218 | 0.15 | 6.827 | 0.000 | 0.000 | 0.153 | 0.279 | ACCEPTED |
| H5 | C->IC | 1.096 | 0.035 | 31.299 | 0.000 | 0.003 | 1.027 | 1.165 | ACCEPTED |
| H6 | C->TP | 0.531 | 0.141 | 3.764 | 0.000 | -0.029 | 0.774 | 0.924 | ACCEPTED |
| H7 | C->DL | -0.740 | 0.031 | 1.166 | 0.244 | -0.008 | -0.508 | 0.083 | REJECTED |
| H8 | IB->TP | 0.195 | 0.127 | 2.535 | 0.000 | 0.000 | 0.230 | 0.501 | ACCEPTED |
| H9 | IC-TP | 1.102 | 0.100 | 11.075 | 0.000 | 0.019 | 0.871 | 1.272 | ACCEPTED |

Table 6 showed confidence intervals for the correlation between DL and IB, ranging from 0.939 to 1.068. The statistical significance of this link was the second highest with a Beta coefficient

of 1.003 and a T-value of 30.629. This result indicates that a standard deviation rise in DL was connected to an increase in IB. Therefore, we will accept H1.

For the correlation between DL and IC, confidence intervals ranged from 0.274 to 0.450. We can say that the link was also statistically significant with a Beta coefficient of 0.362 and a T-value of 8.017. This implies that there is also a positive relationship between the two, thereby H2 was accepted.

With a confidence interval ranging from 0.050 to 0.083, and a Beta coefficient of 0.175 and a T-value of 2.135 we can assume that there is significant relationship between DL and TP. Hence, we can accept H3.

For the correlation between C and IB, confidence intervals ranged from 0.153 to 0.279. We can say that the link was also statistically significant with a Beta coefficient of 0.218 and a T-value of 6.827. This implies that there is also a positive relationship between the two, thereby H4 was accepted.

For C and IC correlation, with a confidence interval ranging from 1.027 to 1.165 and a T-value of 31.299, we can say that, the statistical significance of this link is he highest, with a Beta coefficient of 1.096, therefore H5 was accepted.

For the correlation between C and TP, confidence intervals ranged from 0.774 to 0.924 indicates that correlation between these two was statistically significant, with a Beta coefficient of 0.531 and a T-value of 3.764. H6 will be accepted also.

With a confidence interval ranging from -0.508 to 0.281, and a Beta coefficient of -0.740 and a T-value of 1.166 we can assume that there is no significant relationship between C and DL. Hence, we can reject H7.

For the relationship between IB and TP, confidence intervals ranged from 0.230 to 0.501, Beta coefficient of 1.195 and a T-value of 2.535, the link is also statistically significant so we can accept H8. This means that increase in IB is connected to increase of TP.

Lastly, with a confidence interval ranging from 0.871 to 1.272, and a Beta coefficient of 1.102 and a T-value of 11.075 we can assume that there a significant relationship between IC and TP. Therefore, we will accept H9.

## Discussion

The descriptive statistical analysis of the data reveals significant factors that affects teachers' performance in relation to digital literacy namely: technical digital skills, creativity digital skills, critical-thinking digital skills, information and communication digital skills, and problem-solving digital skills. For innovative behavior, the factors are opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability. The significant factors for culture are cultural values and beliefs, communication styles, student-teacher relationship, and school culture. For interpersonal communication, the factors are dimension of respect, dimension of discipline, and teaching and learning dimension. The significant factors for teachers' performance are knowledge of subject matter, teacher-student relationship, tools and resources, collaboration with others, feedbacks, standards and expectations, fairness and justice, risk taking and self-reflection.

The statistical analysis of structural model reveals significant relationships between the variables. These correlations demonstrates that each variables have impact to other variables. From the results of the study, we can conclude that digital literacy has positive impact to innovative behavior and interpersonal communication and eventually positive results to teachers' performance. Culture has also direct relationship to interpersonal communication and teachers' performance, however it has no significant impact to innovative behavior as per the data analyzed. Innovative behavior and interpersonal communication positively affect teachers' performance at De La Salle University Dasmariñas.

This study introduced nine hypotheses which has generated several significant discoveries. These findings are consistent with prior research conducted by Dewanto et al. (2024), demonstrating beneficial impact of digital literacy and innovative behavior to teachers' performance. Based on the results, digital literacy, innovative behavior, interpersonal communication, and teachers' performance have a positive relationship with each other. However, as per the result of this research culture has no significant relationship with digital literacy.

## Conclusion

The current study analyzes the effect of digital literacy, innovative behavior, culture, and interpersonal communication on teachers' performance at De La Salle University Dasmariñas. According to the findings and discussion, the research generated significant discoveries. One is that direct relationship exists between digital literacy and innovative behavior. Digital literacy has positive relationship with interpersonal communication. Digital literacy has a direct relationship in teachers' performance at De La Salle University Dasmariñas. Culture has direct relationship with innovative behavior, interpersonal communication, and teachers' performance, whereas it has no direct relationship with digital literacy. Innovative behavior and interpersonal communication also have a direct relationship with teachers' performance.

This research study also aims to find ways to help faculty management improve teachers' performance at De La Salle University Dasmariñas. Based on the structural equations modeling, we can conclude the significant factors that positively affects the performance of teachers, and thru this study management must focus and align the university's policy, rules, and regulations to these significant factors. They must enhance teachers' performance by improving their digital literacy, innovative behavior, culture, and interpersonal communication capabilities.

This study has multiple challenges. A notable constraint may be the limited sample size, restricted by duration of the study and concentrate solely on undergraduate college faculty. Applicability to all or general faculty of the university may be also be limited.

Future research on the effects of digital literacy, innovative behavior, culture, interpersonal communication, and interpersonal communication on teacher performance is anticipated to be conducted at all levels of the university, not only specific level. This study has major implications for institutions to consider the various independent variables that exist as significant factors that must be considered to support teacher performance. Future research should be able to further explore other psychological variables that are not widely identified at this time. The addition and heterogeneity of more samples can also increase the quality of the expected results.

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