Virtual physical education: Google Meet as an alternative platform for learning skill-based concepts

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Abstract

Background and Study Aim

Google Meet has been the most highly sought videoconferencing platform utilized by various educational institutions worldwide to facilitate synchronous classes. The said videoconferencing platform is highly efficient based on previously published scholarly works. In line with this, the study aimed to explore the factors linked with students' acceptance and observation of Google Meet. It is also focused on evaluating the effectiveness of the platform vis-à-vis learning skill-based concepts by adopting the Technology Acceptance Model.

Material and Methods

The selected respondents were composed of 2nd-4th year undergraduate students taking Bachelor of Physical Education at City College of Angeles (Angeles, Philippines). The respondents for the study were identified by using the purposive sampling technique. From the 467 entire populaces, 250 students answered the online survey, and all responses were accepted after data cleaning. The Partial Least Squares-Structural Equation Modeling or PLS-SEM through SmartPLS4 was used to explore the factors affecting students' acceptance of Google Classroom (as an alternative platform to learning skill-based concepts in various Physical Education courses). Additionally, outer loadings and the average variance extracted (AVE) were scrutinized and the Fornell-Larcker criterion, cross-loadings, and Heterotrait-Monotrait Ratio (HTMT) were assessed to establish convergent and discriminant validity. Also, a full collinearity assessment on the outer model was performed to determine if the model is free from Common Method Bias (CMB). Meanwhile, PLS Predict was utilized to determine the model's predicting validity and power. Lastly, the structural model was evaluated through path coefficients and the coefficient of determination (R²).

Results

After obtaining data from the samples (N=250) of Bachelor of Physical Education students (Female= 42.0% and Male= 58.0%) utilizing Partial Least Square-Structural Equation Modeling through SmartPLS4, the results displayed that: perceived ease of use is positively and significantly associated with and triggers perceived usefulness; perceived ease of use and perceived usefulness are significantly linked with and leverages students' behavioral intention to use; and, behavioral intention to use is positively interrelated with and affects the actual use of the videoconferencing platform.

Conclusions

The results postulated that PEOU and PU are corroborated to influence BI ensuing the AU of Google Meet. The findings of this study will be used by the Physical Education Department and the college administration to assess if the platform may continuously be used for all skill-based courses. This is in line with the current setting of the investigation since the college is still in a full-online learning modality. Proposals concerning the students, teachers, and future research directions are also presented.

Keywords: acceptance, e-learning, google meet, physical education, skill-based concepts, technology acceptance model, videoconferencing platform

GLOSSARY

Construct’s Items.

Perceived usefulness of Google Meet in skill-based concepts in Physical Education (PEOU):
PEOU1- Google meet enhances my efficiency;
PEOU2- Google Meet enhances my learning productivity;
PEOU3- Google Meet enables me to accomplish tasks more quickly;
PEOU4- Google Meet improves my performance;
PEOU5- Google Meet saves my time;
PEOU6- Google Meet doesn’t have any distinctive useful features;
PEOU7- Google Meet is not applicable to all skill-based concepts in Physical Education.

Perceived ease of use of Google Meet (PU):
PU1- Google Meet is easy to use;
PU2- Google Meet enables me to access course materials in skill-based courses in Physical Education;
PU3- Google Meet is convenient and user-friendly;
PU4- Google Meet allows me to submit/present my assignments/quizzes through video and live presentation;
PU5- Google Meet requires no training;
PU6- Google Meet makes it easier to avoid academic difficulties in learning skill-based concepts in Physical Education.

Behavioral Intention to use Google Meet (BI):
BI1- I intend to increase my use of the Google Meet;
BI2- It is worth to recommend Google Meet to other students;
BI3- I’m interested to use the Google Classroom more
Introduction
The online learning modality provided numerous advantages and benefits during the onslaught of COVID-19, where all schools were forced to close temporarily due to the rampant spread of the virus [1]. From the traditional face-to-face, all classes were forced to shift to a virtual learning environment [2]. The modality, as mentioned earlier, has been utilized by various educational institutions globally to facilitate students’ erudition in the comfort of everyone’s home. Even during this post-pandemic epoch, this learning modality will still play a critical role in supporting Higher Education Institutions (HEIs) to deliver quality education to students [3]. Some advantages of online learning are flexibility, easy access, and interaction between students and instructors [4]. For the instructors to meet their respective classes and facilitate class synchronously, institutions have been utilizing various videoconferencing suites, including Google Meet (formerly known as Hangout Meet), which is currently integrated with Google Classroom. Introduced by Google Apps for Education (GAFE) in 2014, Google Classroom is a learning management system (LMS) and also a virtual classroom that allows teachers to create and organize educational materials and assignments quicker, provides effective feedback on time, and communicate with learners with ease [5]. This LMS is highly designed to save time and is flexible, accessible, and incredibly mobile-friendly [6]. Undeniably, Google Meet has been used as a videoconferencing solution by most educational institutions and has been able to establish its effectiveness as a pedagogical tool for various disciplines, which was supported by numerous published scholarly works [7, 8, 9, 10]. Lamentably, there were only a few published scholarly works that were conducted in the Higher Education Institutions’ context, particularly in the Local Colleges and Universities (LCUs) in the Philippines. Therefore, investigating the students’ acceptance and effectiveness of Google Meet is highly needed. With the need to conduct research, this study is focused on exploring the factors that could affect students’ acceptance and perception of Google Classroom as an alternative tool for teaching skill-based concepts in Physical Education. Furthermore, due to ongoing infrastructure development, the study’s milieu is temporarily in a full-online learning modality. Hence, students and teachers are not permitted to conduct face-to-face classes on campus. As a final point, the findings of this study aimed to provide valuable information to physical education teachers and college administrators concerning the effectiveness of Google Meet. The results will be considered if the video conferencing application can continuously serve as an alternative platform for students to learn skill-based concepts in Physical Education.
Numerous investigations were conducted during the COVID-19 pandemic concerning e-learning, and the number of published scholarly works on the effectiveness of Google Meet as a videoconferencing application is still insufficient, especially on its efficacy as an alternative tool for learning skill-based concepts in Physical Education in the local colleges and universities setting. Scholarly works relating to Google Meet are vast to other countries and educational institutions over the recent years, on the assault of the COVID-19 virus, up until the post-pandemic period [11, 12, 13]. Additionally, there have been few recent studies that have been able to utilize the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Expanded Theory of Acceptance and Use of Technology (UTAUT2) providing valuable information to various HEIs the identified factors that affect students’ acceptance and perception of Google Meet and its implementation to various disciplines globally [14, 15, 16]. Aside from these, there have also been studies that added other critical factors that predict students’ utilization of a system [17, 18]. As mentioned above, these scholarly works were able to provide important information to help schools address the needs and demands to facilitate a quality learning experience.
As mentioned earlier, e-learning will still play a significant role in various higher educational institutions in providing quality education for students, even during this post-pandemic period. The use of Google Meet is still relative, as other HEIs worldwide still implement a full-online learning modality, which is the same in the current setting of this investigation. HEIs across the globe utilize Google Meet because of its availability and flexibility and can help students to achieve academic feats. As an example, [19] findings revealed that students and even teachers from the Department of English Language at Oran University, Algeria have an overall positive perception and attitude toward Google Meet during the assault of the COVID-19 virus. The qualitative study by [20] also reported that Google Meet could be an effective tool for elementary students from Elementary School 1 Telukagung Indramayu, Indonesia. Likewise, using Google Meet in the speaking class of students from STKIP Setia Budhi Rangkasbitung indicated a positive result, especially in their perception of its advantages rather than disadvantages [11]. Lastly, assisting lecture methods through the use of Google Meet was found to significantly influence the building knowledge and learning outcomes of elementary school teacher education at the University of Trunojoyo.
Madura [21]. However, digital expertise, learners’ motivation, and internet facilities were enumerated as challenges in implementing online learning using the said videoconferencing application. On a positive note, and based on the abovementioned evidence, it can be construed that Google Meet is indeed an effective pedagogical tool that can foster learning. However, numerous challenges that pose serious threats are still evident in implementing online learning through the support of Google Meet, which needs to be addressed and taken seriously. These challenges are predominantly evident based on earlier studies, in which most educational institutions constantly strive to provide quality education to students [22, 23].

Furthermore, facilitating online classes for skill-based courses in Physical Education has been a challenge faced by various educational institutions worldwide. Such as the monotony of classes within a limited environment and education content, which does not convey the value of Physical Education [1, 24]. Because of trial-and-error, this resulted in a lack of experience and expertise in the operation of Physical Education classes and limited assessment guidelines, which has made the systematic evaluation with e-learning impossible, added by Jeong and So. Moreover, online Physical Education classes were reported ineffective in improving students’ motor skill acquisition and physical activity level regardless of what e-learning being utilized [25]. Lack of practical training, learning motivation and interest, and interpersonal interactions were the primary reasons of the ineffectiveness of online Physical Education class. Because of this, students are highly dissatisfied with the online discussions, conversing, interacting, participating, and speaking online [26]. Additionally, Physical Education teachers have reported difficulties because no visual connection is established [27] during online classes which resulted to unmotivated and passive student. Likewise, student–teacher interaction (i.e., feedback), technology-related experience (i.e., use of technology and unstable connection), online classroom experiences (i.e., scarcity of educational facilities, learning space and access to materials), pedagogical-related experiences (i.e., the amount of time performing physical activities, true ‘value’ of physical education, and lack of teacher’s demonstration), and personal-related experience (i.e., learning style) were enumerated as challenges faced by students currently in an online Physical Education class reported by the findings of [28].

Physical Education’s practical and social nature cannot be translated in a virtual scenario regardless of the newest discoveries and innovations [29, 30]. The shreds of evidence mentioned above have identified the different challenges that schools face in Physical Education in a virtual setting because of the discipline’s nature. On the positive side, there are still noteworthy evidence reported during and after the pandemic in online Physical Education globally. Such as the findings of [31] reported that independence and adaptation to the new normal are the results of having classes in an online setting in Physical Education. Additionally, health and physical education online classes had a more favorable perception from the students concerning their experiences because of teachers’ feedback and responsiveness, understanding related to the content, and health gains [32, 33]. To put it briefly, addressing these challenges experienced by students is highly obligatory to provide meaningful experiences in learning skill-based concepts in Physical Education, even in an online learning modality.

**Technology Acceptance Model (TAM) by Davis (1989)**

Several theories and models in relation to Information Systems (IS) and Intention-Based were already introduced throughout the years concerning individuals’ acceptance of a new technology [34]. The most acclaimed and highly influential model is the Technology Acceptance Model (TAM) established by [35]. Based on the model of Davis, TAM posited that there are two primary exogenous factors that influence individuals’ intention to use a new technology which are: Perceived ease of use (PEOU) and Perceived usefulness (PU) [36]. Perceived ease of use is the degree to which a person believes utilizing a system would not need any such efforts [37]. On the other side, perceived usefulness of a system is related to the productivity and effectiveness of the platform and its overall benefits to increase user’s performance [38]. Based from previously published scholarly works, the adaptation of this specific model has been widespread across various disciplines, particularly in education, industries, and even using TAM with other exogenous variables [39, 40, 41, 42, 43]. Additionally, research papers concerning the adaptation of TAM in assessing students’ acceptance and perception of various pedagogical platforms, including Google Meet, have established PEOU and PU as primary external factors that influence their behavioral intention (BI) and actual use (AU) [44, 45, 46]. Over the past years, TAM provided a solid background of its effectiveness in assessing the acceptance of new technology to individuals. To emphasize, this present study is concentrated on adopting TAM (without other exogenous variables), exploring the factors that influence students’ acceptance of Google Meet as an alternative platform for learning skill-based concepts in Physical Education courses. Ergo, this study is interested to test the following hypotheses:

**H1:** Perceived ease of use positively influences the perceived usefulness of Google Meet in learning skill-based concepts in Physical Education.

**H2:** Perceived ease of use positively influences
students’ behavioral intention to use Google Meet in learning skill-based concepts in Physical Education.

\textbf{H}_3: \text{Perceived usefulness positively influences students’ behavioral intention to use Google Meet in learning skill-based concepts in Physical Education.}

\textbf{H}_4: \text{Behavioral intention of students influences the actual use of Google Meet in learning skill-based concepts in Physical Education.}

Based from the hypotheses, the conceptual framework was formulated which is illustrated in Figure 1.

\begin{table}[h]
\centering
\begin{tabular}{lll}
\hline
\textbf{Gender} & \textbf{Values} & \textbf{Percentage} \\
\hline
Female & 145 & 58.0 \\
Male & 105 & 42.0 \\
\hline
\end{tabular}
\caption{Gender}
\end{table}

\textit{Materials and Methods}

\textit{Participants}

The selected respondents for the study were composed of 2\textsuperscript{nd}–4\textsuperscript{th} year students taking Bachelor of Physical Education degree at City College of Angeles, located in the City of Angeles, Philippines. All of the participating respondents are all enrolled for the 1\textsuperscript{st} Semester, the Academic Year 2022-2023. 1\textsuperscript{st}-year students were not included because they are relatively new in the college. The respondents for this study were identified by using the \textit{Purposeful sampling technique}. It is a non-probability procedure where the investigator purposively chooses the respondents for the study due to the qualities they possess \cite{47, 48}. Additionally, \textit{Raosoft Sample Size Calculator} was used to determine the recommended sample size based on the total population. From the 467 entire populaces, the suggested sample size is 212. Exceptionally, there are 250 students who answered the online survey, and all responses were accepted after data cleaning. Based on the findings, most of the respondents are females (N=145) constituting 58.0\% of the overall total sample compared to males (N=105) with 42.0\% which is shown in Table 1.

\textit{Ethical considerations.}

All participating respondents were informed regarding the study’s objectives, the questionnaire to be used, and the constructs that will be measured. The benefits of the study on the college and the scientific community were also provided. In this, the respondents were required to provide their consent by clicking the agreement attached in the Google Forms sent to them electronically. They were also given the freedom of choice whether to participate in the study or decline, which means that their participation in the survey was voluntary. Minor risks were reiterated, such as being uncomfortable in answering personal and sensitive survey questions. Likewise, no monetary compensation would be provided for giving out information. Given these circumstances, respondents are free to withdraw or to ask for a debriefing about the study anytime.

\textit{Research Design}

\textit{Instrument.} The tool that was used for this study is divided into two (2) sections. The first part is focused on gathering the gender of the respondents, and the second part collected all the data using the original Technology Acceptance Model by \cite{35} which has four (4) constructs: \textit{Perceived ease of use} [PEOU] (e.g., “Google Meet enhances my learning productivity.”), \textit{Perceived usefulness} [PU] (e.g., “Google Meet makes it easier to avoid academic difficulties in learning skill-based concepts in Physical education.”), \textit{Behavioral intention to use} [BI] (e.g., “I’m interested to use the Google Classroom more frequently in the future.”), and \textit{Actual use} [AU] (e.g., “I use the Google Meet frequently”). All items for each construct were adapted with some few adjustments to tailor-fit the instrument to the scope of this investigation. Responses are recorded in a 7-point Likert scale (1- “extremely disagree” to 7- “extremely agree”). The items that were used are shown in Glossary.

\textit{Statistical Analysis}

The \textit{Partial Least Squares-Structural Equation Modeling} or PLS-SEM through SmartPLS4 was used to explore the factors affecting students’ acceptance of Google Classroom as an alternative platform to learning skill-based concepts in various Physical Education courses. PLS-SEM as a statistical treatment for obtained data is highly suitable for this investigation \cite{49}. Regarding the measurement
model, the outer loadings of each item and the average variance extracted (AVE) were scrutinized to establish convergent validity [50]. Likewise, the Fornell-Larcker criterion, cross loadings, and Heterotrait-Monotrait ratio (HTMT) were assessed to establish discriminant validity [50]. Also, a full collinearity assessment on the outer model was performed to determine if the model is free from Common Method Bias or CMB [50, 51]. PLS Predict was utilized to determine the model’s predicting validity and power [52, 53]. Finally, the structural model was evaluated through path coefficients and the coefficient of determination ($R^2$) [50, 54].

**Results**

**Factor Analysis**

In order to measure the reliability of each item, a factor loading analysis was performed. A threshold value ≥0.70 for each item’s loading [50]. After extracting all the items below 0.70 and removed from the model, all retained items are reliable based on the threshold value. Additionally, Cronbach’s Alpha value (CA) and composite reliability should be ≥0.70. The Average Variance Extracted (AVE) is used to validate constructs [55]. It is also defined as the grand mean value of the squared loadings of the items related to the construct and the standard measure for establishing convergent validity. The AVE should be ≥0.50, and the corresponding p-value must be at most 0.50 [47,50]. As can be seen in Table 2, Cronbach’s Alpha value, composite reliability, and average variance extracted all met the threshold value: Perceived ease of use [PEOU] (CA 0.858; CR 0.859; AVE 0.706), perceived usefulness [PU] (CA 0.850; CR 0.858; AVE 0.664), behavioral intention to use [BI] (CA 0.869; CR 0.872; AVE 0.793), and actual use [AU] (CA 0.856; CR 0.858; AVE 0.874). Hence, convergent validity has been established. On the other hand, to establish the discriminant validity, the Fornell-Larcker criterion, cross-loadings, and the Heterotrait-Monotrait Ratio should be inspected. For the Fornell-Larcker criterion, the square root of AVE (diagonal value) in each variable should surpass the correlation of latent variables as presented in Table 3. For the cross-loadings, the loading of each indicator should be higher than the loadings of its corresponding variables’ indicators, as shown in Table 4. Table 5 forecasts the result of the Heterotrait-Monotrait ratio (HTMT). The HTMT value should be <0.90. Based on the findings, most of the values are <0.90. Hence, discriminant validity has been established.

Table 6 illustrates the result from the full collinearity assessment performed to determine if

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Loadings</th>
<th>CA</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived ease of use</td>
<td>PEOU2</td>
<td>0.875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEOU3</td>
<td>0.880</td>
<td>0.858</td>
<td>0.859</td>
<td>0.706</td>
</tr>
<tr>
<td></td>
<td>PEOU4</td>
<td>0.882</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEOU5</td>
<td>0.713</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived usefulness</td>
<td>PU2</td>
<td>0.827</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU3</td>
<td>0.788</td>
<td>0.850</td>
<td>0.838</td>
<td>0.664</td>
</tr>
<tr>
<td></td>
<td>PU4</td>
<td>0.887</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU5</td>
<td>0.750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral intention to use</td>
<td>BI1</td>
<td>0.849</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BI2</td>
<td>0.915</td>
<td>0.869</td>
<td>0.872</td>
<td>0.793</td>
</tr>
<tr>
<td></td>
<td>BI3</td>
<td>0.907</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual use</td>
<td>AU1</td>
<td>0.959</td>
<td>0.856</td>
<td>0.858</td>
<td>0.874</td>
</tr>
<tr>
<td></td>
<td>AU2</td>
<td>0.951</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item loadings >0.70, Cronbach’s Alpha Value (CA) and Composite Reliability (CR) >0.70, Average Variance Extracted (AVE) >0.50 [47,50,55] such as the average variance extracted (AVE).

<table>
<thead>
<tr>
<th>Constructs</th>
<th>AU</th>
<th>BI</th>
<th>PEOU</th>
<th>PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td>0.935</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>0.686</td>
<td>0.891</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>0.514</td>
<td>0.651</td>
<td>0.841</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.674</td>
<td>0.765</td>
<td>0.651</td>
<td>0.815</td>
</tr>
</tbody>
</table>
Table 4. Cross loading results

<table>
<thead>
<tr>
<th>Items</th>
<th>AU</th>
<th>BI</th>
<th>PEOU</th>
<th>PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU1</td>
<td>0.939</td>
<td>0.661</td>
<td>0.504</td>
<td>0.640</td>
</tr>
<tr>
<td>AU2</td>
<td>0.931</td>
<td>0.621</td>
<td>0.455</td>
<td>0.620</td>
</tr>
<tr>
<td>BI1</td>
<td>0.594</td>
<td>0.849</td>
<td>0.566</td>
<td>0.645</td>
</tr>
<tr>
<td>BI2</td>
<td>0.651</td>
<td>0.915</td>
<td>0.595</td>
<td>0.723</td>
</tr>
<tr>
<td>BI3</td>
<td>0.586</td>
<td>0.907</td>
<td>0.576</td>
<td>0.672</td>
</tr>
<tr>
<td>PEOU2</td>
<td>0.428</td>
<td>0.571</td>
<td>0.875</td>
<td>0.546</td>
</tr>
<tr>
<td>PEOU3</td>
<td>0.414</td>
<td>0.513</td>
<td>0.880</td>
<td>0.556</td>
</tr>
<tr>
<td>PEOU4</td>
<td>0.475</td>
<td>0.565</td>
<td>0.882</td>
<td>0.536</td>
</tr>
<tr>
<td>PEOU5</td>
<td>0.405</td>
<td>0.531</td>
<td>0.713</td>
<td>0.544</td>
</tr>
<tr>
<td>PU2</td>
<td>0.561</td>
<td>0.607</td>
<td>0.518</td>
<td>0.827</td>
</tr>
<tr>
<td>PU3</td>
<td>0.508</td>
<td>0.605</td>
<td>0.593</td>
<td>0.788</td>
</tr>
<tr>
<td>PU4</td>
<td>0.611</td>
<td>0.706</td>
<td>0.562</td>
<td>0.887</td>
</tr>
<tr>
<td>PU5</td>
<td>0.514</td>
<td>0.565</td>
<td>0.457</td>
<td>0.750</td>
</tr>
</tbody>
</table>

Table 5. Heterotrait-Monotrait Ratio (HTMT)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>AU</th>
<th>BI</th>
<th>PEOU</th>
<th>PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td></td>
<td>0.794</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>0.599</td>
<td>0.754</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.800</td>
<td>0.897</td>
<td>0.768</td>
<td></td>
</tr>
</tbody>
</table>

Heterotrait-Monotrait ratio (HTMT) <0.90 [56]

Table 6. Collinearity Statistics (VIF) – Outer model

<table>
<thead>
<tr>
<th>Items</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU1</td>
<td>2.270</td>
</tr>
<tr>
<td>AU2</td>
<td>2.270</td>
</tr>
<tr>
<td>BI1</td>
<td>1.850</td>
</tr>
<tr>
<td>BI2</td>
<td>2.858</td>
</tr>
<tr>
<td>BI3</td>
<td>2.827</td>
</tr>
<tr>
<td>PEOU2</td>
<td>2.825</td>
</tr>
<tr>
<td>PEOU3</td>
<td>2.615</td>
</tr>
<tr>
<td>PEOU4</td>
<td>2.845</td>
</tr>
<tr>
<td>PEOU5</td>
<td>1.381</td>
</tr>
<tr>
<td>PU2</td>
<td>2.172</td>
</tr>
<tr>
<td>PU3</td>
<td>1.652</td>
</tr>
<tr>
<td>PU4</td>
<td>2.619</td>
</tr>
<tr>
<td>PU5</td>
<td>1.533</td>
</tr>
</tbody>
</table>

VIF Values should be <3.3 threshold [50, 51].

the model is free from common method bias (CMB). In this, VIF values should be <3.3 threshold [50, 51]. Based on the findings, all items have VIF values <3.3. Hence, the result can be interpreted that the model is unrestricted from CMB.

Table 7 illustrates the results after performing PLS-Predict assessing the predictive power/validity of the model. Additionally, Q^2 predict values should be >0 as can be seen on the table. Furthermore, after investigating the PLS-SEM MV error histogram, most of the indicators are symmetrical. Hence, PLS-SEM_RMSE and LM_RMSE can be compared to determine the predictive power of the model. Based on the findings, that majority of indicators in PLS-SEM_RMSE are lower than LM_RMSE, and this can be interpreted that the model has a moderate
predictive power. The result is in accordance to the guidelines as set by [53].

**Structural Model Assessment**

The explanatory power of the model has been evaluated by measuring the discrepancy amount in the dependent variables of the model. As [50] have stated, the R2 and the path coefficients are the essential measures for assessing the structural model. As seen in Figure 2, the model has R2 value of PU is 42.1%, BI 62.2%, and AU 46.9% respectively.

The model was bootstrapped into 10,000 subsamples for the path analysis, as suggested by scholars [50, 57, 58]. Each hypothesis' path coefficient and p-values are illustrated in Figure 2 and Table 8. Based on the findings, students' perceived ease of use (PEOU) is positively linked with and triggers their perceived usefulness (PU) of Google Meet, which supported H1 ($\beta = 0.651$, $p < .05$). Also, students’ perceived ease of use (PEOU) and perceived usefulness (PU) are significantly interconnected with and influences their behavioral intention (BI) to use the said videoconferencing platform which indicates that H2 ($\beta = 0.266$, $p < .05$) and H3 ($\beta = 0.592$, $p < .05$) were supported. Finally, students’ behavioral intention to use (BI) is associated with and impacts their actual use (AU)

**Table 7. Model’s Predictive power using PLSPredict**

<table>
<thead>
<tr>
<th>Items</th>
<th>$Q^2$ Predict</th>
<th>PLS-SEM_RMSE</th>
<th>PLS-SEM_MAE</th>
<th>LM_RMSE</th>
<th>LM_MAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU1</td>
<td>0.234</td>
<td>1.050</td>
<td>0.836</td>
<td>1.067</td>
<td>0.840</td>
</tr>
<tr>
<td>AU2</td>
<td>0.194</td>
<td>1.080</td>
<td>0.850</td>
<td>1.093</td>
<td>0.859</td>
</tr>
<tr>
<td>BI1</td>
<td>0.307</td>
<td>0.974</td>
<td>0.724</td>
<td>0.991</td>
<td>0.733</td>
</tr>
<tr>
<td>BI2</td>
<td>0.338</td>
<td>0.999</td>
<td>0.749</td>
<td>1.011</td>
<td>0.757</td>
</tr>
<tr>
<td>BI3</td>
<td>0.318</td>
<td>1.066</td>
<td>0.801</td>
<td>1.073</td>
<td>0.809</td>
</tr>
<tr>
<td>PU2</td>
<td>0.247</td>
<td>0.981</td>
<td>0.718</td>
<td>0.975</td>
<td>0.710</td>
</tr>
<tr>
<td>PU3</td>
<td>0.337</td>
<td>1.115</td>
<td>0.822</td>
<td>1.125</td>
<td>0.805</td>
</tr>
<tr>
<td>PU4</td>
<td>0.298</td>
<td>0.954</td>
<td>0.727</td>
<td>0.944</td>
<td>0.723</td>
</tr>
<tr>
<td>PU5</td>
<td>0.176</td>
<td>1.151</td>
<td>0.848</td>
<td>1.171</td>
<td>0.866</td>
</tr>
</tbody>
</table>

If all the indicators in the PLS-SEM analysis have lower RMSE (or MAE) value compared to the naïve LM benchmark, the model has high predictive power; if the majority (or the same number) of indicators in the PLS-SEM analysis yields smaller prediction errors compared to the LM, this indicates a medium predictive power; if a minority of the dependent construct’s indicators produce lower PLS-SEM prediction errors compared to the naïve LM benchmark, this indicates the model has low predictive power; and if the PLS-SEM analysis (compared to the LM) yields lower prediction errors in terms of the RMSE (or the MAE) for none of the indicators, this indicates the model lacks predictive power [52].

**Figure 2. Path analysis results**
of Google Meet as an alternative platform to learn skill-based concepts in Physical Education, which can be posited that H4 has been supported ($\beta = 0.686, p < 0.05$).

**Discussion**

Findings discovered that PEOU and PU are indeed external factors that are positively associated with and trigger students’ behavioral intention and the use of Google Meet as an alternative pedagogical platform in learning skill-based concepts in various Physical Education courses. Ergo, the findings posited that the utilization of the said videoconferencing platform is undeniably effortless and easy to operate, which echoed the findings of previously conducted investigations [8, 59]. Also, students’ positive perception of Google Meet as an effective platform can enhance class performance due to its accessibility and practicality. The findings are parallel to the study of [60] which indicated that using Google Meet as a videoconferencing tool to facilitate online classes could increase students’ academic performance, and improve motivation [11, 19]. On the one hand, this present study has only focused on the direct effect of PEOU and PU as exogenous factors on the BI and AU of Bachelor of Physical Education students toward Google Meet. It is constrained to the factors mentioned in the Technology Acceptance Model (TAM) with no other additional exogenous variables/factors. As mentioned earlier, other factors could also affect BI and AU, which are not mentioned in this present investigation. For a more in-depth explanation, social and performance expectancy were also factors that can directly affect BI and AU based on the Unified Theory of Acceptance and Use of Technology (UTAUT) [15, 61], while facilitating conditions, hedonic motivations, and event habits were also revealed as external factors based on previously conducted studies adopting the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) [62, 63]. Published scholarly works supporting this study’s findings are based on various disciplines from various educational institutions. The results of this investigation are significant because it has demonstrated an important task: to provide new knowledge and data that can fill the gap between research across the field of educational technology and physical education.

Most importantly, the findings benefit City College of Angeles, especially for all the Physical Education teachers and the college administrators, as it provided a picture of the effectiveness of Google Meet as an alternative platform for students to learn skill-based concepts in Physical Education. Additionally, these findings will determine whether the department will continue using the said platform or the other way around. This is in line with the commitment of the college to provide quality education to students even in a full-online learning modality.

**Conclusions**

Adopting the Technology Acceptance Model (TAM) and after performing partial least square-structural equation modeling (PLS-SEM), it has been verified that perceived ease of use (PEOU) and perceived usefulness (PU) can significantly affect Bachelor of Physical Education students’ behavioral intention and actual use of Google Meet as an alternative tool in learning skill-based concepts in Physical Education. The critical features significantly affecting students’ perception of operating the platform are its familiarity and effortlessness. Interestingly, another remarkable finding was that Bachelor of Physical Education students could rely on Google Meet as an alternative platform to efficiently learn and acquire skill-based concepts while leveraging the college’s educational system. The conclusions have been derived based on students’ high reliance on the platform as per previously cited constructs. With this, Google Meet’s benefits may be maximized by providing various training opportunities for the Bachelor of Physical Education students. The practical features of the videoconferencing platform should be comprehensively explored so that no students will be left behind, especially during this time of fast-evolving technological discoveries.

From a professional development perspective, providing in-depth and extensive training to Physical Education instructors to explore and maximize the operation of Google Classroom through Google Meet will significantly help their respective online classes. Additionally, additional training focusing on creative pedagogical techniques applicable in an online learning modality is highly suggested to improve creativity that may catch the interest and boost the motivation of students taking Physical Education courses, which may result in exceptional

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**Table 8. Hypotheses testing results**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Path</th>
<th>Path Coefficient</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_1$</td>
<td>PEOU $\rightarrow$ PU</td>
<td>0.651</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H_2$</td>
<td>PEOU $\rightarrow$ BI</td>
<td>0.266</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H_3$</td>
<td>PU $\rightarrow$ BI</td>
<td>0.592</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H_4$</td>
<td>BI $\rightarrow$ AU</td>
<td>0.686</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>
academical feats. The proposals mentioned above are based on previously conducted studies reporting teachers’ inadequate knowledge of operating and facilitating teaching and learning in an online learning modality. Therefore, policymakers and practitioners should provide interventions to address these challenges faced by Physical Education instructors and to increase their familiarity with the platform, which may greatly support and help their professional careers. It is only imperative to provide such activities for instructors, as they facilitate the teaching and learning process. Also, it is well known that teachers’ capacity and knowledge operating the platform may affect students’ interest, motivation, and engagement in class.

Above all, the limitations of this study are fundamental to note. First, this study is limited as it only adopted the Technology Acceptance Model (TAM) without other exogenous variables, as mentioned in the discussion. It was also emphasized that aside from the perceived ease of use (PEOU) and perceived usefulness (PU), other exogenic factors were identified that affect students’ behavioral intention (BI) and actual use (AU) of a pedagogical platform. Therefore, adopting the Unified Theory of Acceptance and Use of Technology (UTAUT), Extended Unified Theory of Acceptance and Use of Technology (UTAUT2), or other behavior-intention theories and models for future research is highly proposed to determine these factors’ influence on students’ behavioral intention and actual use of Google Meet in learning skill-based concepts in Physical Education. Additionally, a qualitative or mixed-method design is highly recommended as it will provide a more profound and in-depth discovery of the various factors that could affect students’ acceptance and usage of the said videoconferencing platform. Aside from these, the present investigation is restricted to students taking the Bachelor of Education program at City College of Angeles. Hence, the result of this study may not be able to generalize the entire students of Higher Education Institutions (HEIs) in the city or even in the country. In this regard, future scholars may find curiosity in conducting a similar inquiry by collecting data from other private and public higher education institutions to determine if the findings may be supported or opposed. Finally, a multi-informant approach or design for future research may be applied by collecting Physical Education teachers’ reports, as they can provide more profound information regarding their perception and acceptance of Google Meet as an alternative pedagogical tool for teaching skill-based concepts for various courses in Physical Education.

To end, this study contributes to the body of knowledge and the existing literature, filling the gap between research concerning the effectiveness of Google Meet in learning skill-based concepts in Physical Education based on students’ acceptance and perception of the said videoconferencing platform, especially in local colleges and universities milieu due to scarcity of published scholarly works concerning this present investigation.

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Conflict of interest

The author declares no conflict of interest.

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