



Perceived Digital Technology Use and Assessment Alignment in Tourism and Hospitality Vocational Education

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Abstrak

Transformasi digital menuntut pendidikan vokasi pariwisata dan perhotelan untuk menyelaraskan pemanfaatan teknologi dengan capaian pembelajaran yang bersifat komunikatif dan prosedural. Penelitian ini menerapkan pendekatan kuantitatif non-eksperimental untuk mengkaji penilaian mahasiswa terhadap pemanfaatan media dan teknologi serta persepsi mengenai keselarasan antara nilai dan capaian pembelajaran di Politeknik Pariwisata Makassar. Data sekunder berupa hasil kuesioner dari tujuh kelas pada Semester Ganjil 2025/2026 dianalisis menggunakan frekuensi setiap item berdasarkan kategori penilaian. Dataset mencakup 208 respons yang valid dari 209 mahasiswa yang terdaftar (99,52%). Item 5 mengukur pemanfaatan media dan teknologi, sedangkan Item 9 mengukur persepsi mahasiswa terhadap keselarasan antara nilai dan capaian pembelajaran. Hasil analisis deskriptif berbobot frekuensi menunjukkan penilaian yang sangat tinggi untuk Item 5 ($M = 4,76$, $SD = 0,59$; 81,73% kategori Sangat Baik) dan Item 9 ($M = 4,73$, $SD = 0,59$; 78,37% kategori Sangat Baik). Uji Kruskal-Wallis tidak menunjukkan perbedaan yang signifikan secara statistik antarkelas pada Item 5, $H(6) = 11,48$, $p = 0,075$, epsilon-squared = 0,027, maupun Item 9, $H(6) = 11,70$, $p = 0,069$, epsilon-squared = 0,028. Perbandingan berdasarkan jenis mata kuliah juga tidak menunjukkan perbedaan yang signifikan. Pada tingkat kelas, rerata Item 5 dan Item 9 menunjukkan hubungan yang kuat, Spearman $\rho = 0,893$, $p = 0,007$; namun, hasil ekologis ini tidak dapat diinterpretasikan sebagai korelasi pada tingkat individu mahasiswa. Karena sumber data hanya menyediakan frekuensi marginal setiap item, Cronbach's alpha, validitas item-total, analisis faktor, serta korelasi atau regresi pada tingkat individu tidak dapat diidentifikasi secara statistik. Temuan ini menunjukkan adanya praktik pedagogi digital yang positif tetapi sensitif terhadap karakteristik mata kuliah, sekaligus menegaskan pentingnya menyesuaikan klaim analitis dengan struktur data evaluasi institusional.

Kata kunci: evaluasi mahasiswa, integrasi digital, keselarasan penilaian, pendidikan perhotelan, pendidikan vokasi pariwisata

Abstract

Digital transformation requires tourism and hospitality vocational education to align technology with communicative and procedural learning outcomes. This study implements a quantitative, nonexperimental study that examined student evaluations of media and technology utilization and perceived alignment between grades and learning outcomes at Politeknik Pariwisata Makassar. Secondary questionnaire reports from seven classes in the Odd Semester of 2025/2026 were analyzed using exact item-by-rating frequencies. The dataset represented 208 valid responses from 209 enrolled students (99.52%). Item 5 measured media and technology utilization, while Item 9 measured perceived alignment between grades and learning outcomes. Frequency-weighted descriptive procedures showed very high ratings for Item 5 ($M = 4.76$, $SD = 0.59$; 81.73% Very Good) and Item 9 ($M = 4.73$, $SD = 0.59$; 78.37% Very Good). Kruskal-Wallis tests did not identify statistically significant differences among the seven classes for Item 5, $H(6) = 11.48$, $p = .075$, epsilon-squared = .027, or Item 9, $H(6) = 11.70$, $p = .069$, epsilon-squared = .028.



Course-type comparisons were also nonsignificant. At the class level, Item 5 and Item 9 means were strongly associated, Spearman rho = .893, $p = .007$; however, this ecological result cannot be interpreted as an individual-student correlation. Because the source reports preserved only marginal item frequencies, Cronbach's alpha, item-total validity, factor analysis, and individual-level correlation or regression were not statistically identifiable. The findings support positive but course-sensitive digital pedagogy and demonstrate the importance of matching analytical claims to the structure of institutional evaluation data.

Keywords: *assesment aligment, digital integration, hospitality education, student evaluation, vocational tourism education*

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Introduction

The tourism and hospitality sectors are increasingly shaped by digital systems, mobile communication, data-driven service, automation, and technology-mediated interactions with guests and travelers (Troisi et al., 2023). These developments affect not only how hotels, travel businesses, and visitor services operate but also how future professionals should be educated. Vocational higher education is therefore expected to produce graduates who can perform practical occupational tasks while adapting to changing digital work environments (Hasrul et al., 2025). The transition is not adequately addressed by simply adding devices, presentation slides, or online platforms to conventional teaching. Digital integration becomes educationally meaningful when technology is selected to support a specific learning outcome, encourage active participation, provide authentic practice, and strengthen feedback. This principle is especially relevant in a tourism polytechnic, where instruction must connect theoretical knowledge, professional communication, operational procedures, and workplace standards.

Recent discussions of industrial transformation have moved from an Industry 4.0 emphasis on connectivity and automation toward an Industry 5.0 perspective that highlights human-centeredness, resilience, and collaboration between people and advanced technologies (Leng et al., 2022; Xu et al., 2021). In education, this shift suggests that digital tools should not displace the lecturer or reduce vocational learning to automated content delivery. Instead, they should extend the

lecturer's pedagogical capacity and create more responsive learning environments. International policy reports similarly argue that educational technology produces value only when it is supported by appropriate pedagogy, teacher competence, infrastructure, and equitable access (OECD, 2023). For vocational institutions, the central question is therefore not whether technology is present, but whether it helps students understand, practise, communicate, reflect, and demonstrate occupational competence.

Student engagement provides a useful lens for examining this question. Engagement includes behavioral participation, emotional involvement, cognitive investment, and the social conditions through which students connect with learning activities (Hasrul et al., 2026). Technology may strengthen these dimensions by enabling interaction, visualization, repeated practice, collaboration, immediate feedback, and flexible access. However, it may also contribute to distraction, cognitive overload, unequal participation, or superficial activity when its use is not aligned with the task. Reviews of higher education research show that educational technology can support engagement, but its effects depend strongly on instructional design and the way teachers mediate the learning process (Bedenlier et al., 2020; Bond et al., 2020; Bond & Bedenlier, 2019; Schindler et al., 2017). Kahu & Nelson, (2018) further emphasize that engagement emerges at the educational interface where institutional conditions, teaching practices, and students' own experiences interact.

The relevance of pedagogical alignment is particularly clear in hospitality and tourism education. A systematic review by Huang et al., (2021) found that instructional technologies in the field have been used for content delivery, practice, communication, assessment, feedback, and authentic learning. Common applications include simulations, virtual environments, social media, online courses, and immersive media. Yet the review also identified weak theoretical grounding and limited evidence about whether the benefits of particular technologies justify their costs. Studies of hospitality simulations similarly show that educators value technology for connecting theory with practice, decision making, teamwork, and problem solving, while also reporting concerns about complexity, time, cost, and realism (Deale et al., 2021; Hasrul et al., 2026). Research on tourism students' acceptance of augmented and virtual reality demonstrates that usefulness, motivation, accessibility, and perceived value influence adoption (Shen et al., 2022). These findings indicate that the effectiveness of digital integration must be evaluated within the specific course and learning task rather than assumed from the presence of technology alone.

Two course types represented in the institutional reports illustrate different digital affordances. Professional English is communication-oriented and was delivered in both Hotel Management and Travel Business programs. Students are expected to use language for guest interaction, tourism workplace explanations, problem solving, presentations, and professional collaboration. Digital media can provide audio-visual models, pronunciation support, interactive quizzes, role-play prompts, authentic service scenarios, and repeated speaking practice (Troisi et al., 2023). Research on technology-assisted language learning reports benefits for language performance, motivation, collaboration, learner autonomy, and access to multimodal input, while also warning about insufficient digital literacy, anxiety, and technical limitations (Buddha et al., 2024; Shadiev & Yang, 2020). Mobile and multimedia approaches can improve learning performance when they are integrated into structured activities rather than used as stand-alone entertainment (Sung et al., 2016). Systematic reviews of augmented and virtual reality in language learning likewise identify immersion, interaction, reduced anxiety, and motivation as potential benefits, although teacher preparation

and task design remain decisive (X. Huang et al., 2021; Parmaxi & Demetriou, 2020).

Housekeeping Operations, by contrast, is procedure-oriented and highly visual. Students need to recognize equipment, sequence tasks, follow safety and hygiene standards, evaluate room conditions, and perform work according to service specifications. Digital media can display close-up demonstrations, standard operating procedures, room layouts, error examples, and step-by-step processes that may be difficult to observe simultaneously during a live demonstration. Multimedia learning research suggests that learners can benefit when words and visuals are coordinated, unnecessary information is reduced, and complex procedures are segmented into manageable stages (Mayer, 2020). Immersive and simulation-based environments may further support practical understanding by allowing students to observe or rehearse situations that are costly, risky, or difficult to reproduce repeatedly. Reviews of immersive learning in higher education report positive effects on motivation and conceptual understanding but also identify usability problems, cognitive load, and the need for instructional guidance (Hamilton et al., 2021; Radianti et al., 2020).

Student satisfaction and perception data are often used by institutions to evaluate teaching quality. Such data are valuable because students can report whether learning activities are clear, engaging, accessible, and relevant. In vocational education, recent evidence shows that digital technology use can be associated with satisfaction through the quality of the learning experience and engagement (Zhang et al., 2024a). Nevertheless, perception is not identical to achievement. A student may enjoy a digital activity without demonstrating better competence, while a demanding activity may produce learning even when it receives a less favorable rating. Similarly, students' belief that grades are appropriate should not be treated as a direct measure of academic performance. Assessment research distinguishes between satisfaction with assessment, understanding of criteria, feedback literacy, evaluative judgment, and demonstrated achievement (Carless & Boud, 2018; Tai et al., 2018). Digital assessment can improve feedback and participation when criteria and instructional support are clear, but the evidence must be interpreted carefully (Heil & Ifenthaler, 2023).

The present study emerged from seven institutional lecturer-evaluation reports at Politeknik Pariwisata Makassar. The reports provide exact counts for each of five Likert response categories across 28 questionnaire items, together with class enrollment and response totals. They do not, however, preserve a respondent-by-item matrix. This distinction allows exact descriptive and item-specific group analysis but prevents the valid calculation of internal-consistency reliability, item-total correlations, factor analysis, and individual-level associations between different questionnaire items. The study therefore uses the strongest analyses supported by the available marginal frequencies and explicitly separates student-level evidence from exploratory class-level evidence.

The study offers three forms of novelty. First, it compares digital-integration perceptions across seven classes in two vocational programs-Hotel Management and Travel Business-and two pedagogically different course contexts: Professional English and Housekeeping Operations. Second, it corrects denominator inconsistencies by calculating valid percentages from the number of actual respondents rather than automatically using enrollment totals. Third, it demonstrates a reproducible method for converting routine institutional questionnaire reports into a frequency-weighted SPSS-ready dataset while preventing unsupported reliability and causal claims. These contributions position student evaluation data as a quality-assurance resource rather than as direct proof of academic achievement.

Accordingly, the study addresses four research questions: (1) What were the response profile and overall evaluation patterns across the seven classes? (2) How did students rate media and technology utilization (Item 5) and the alignment between grades and learning outcomes (Item 9)? (3) Did Item 5 and Item 9 rating distributions differ across classes or course types? and (4) At the class level, how closely were the mean ratings of Item 5 and Item 9 associated? The fourth question is explicitly ecological and is not interpreted as a relationship between individual students' responses.

Method

Research Design and Data Source

This study adopted a quantitative, nonexperimental, the source data were seven routine lecturer-evaluation reports generated through the Politeknik Pariwisata Makassar SIAKAD Cloud system during the Odd Semester of 2025/2026. the Odd Semester of the 2025/2026 academic year at Politeknik Pariwisata Makassar. The reports covered seven classes: PPH5A and PPH5B in Professional English; PPH3B and RPLB in Housekeeping Operations; and UPW3A, UPW3B, and UPW3C in Professional English. PPH and RPLB classes were associated with Hotel Management, while UPW classes were associated with Travel Business. The reports contained 208 valid responses from 209 enrolled students, producing an overall response rate of 99.52%.

The institutional instrument contained 28 statements rated from 1 (Very Poor/Sangat Tidak Baik) to 5 (Very Good/Sangat Baik). Item 5-'Pemanfaatan media dan teknologi dalam pembelajaran'-was treated as the observed indicator of perceived digital integration. Item 9-'Kesesuaian nilai yang diberikan dengan hasil belajar'-was interpreted as perceived assessment alignment. Item 9 was not treated as direct academic achievement because it records students' judgment about grading appropriateness rather than an examination score, practical competency score, or final course grade.

Each report presented the marginal frequency of ratings 1-5 for every item and class. The data were transcribed into a long-format file with class, program, course, item, rating, and frequency variables. Frequency was used as the case weight for item-specific analyses. Percentages were recalculated using the valid respondent count for each class. This was particularly important for PPH5A: 33 students responded from an enrollment of 34, while the displayed report percentages used 34 as the denominator. The analysis therefore used the exact counts and $N = 33$, ensuring that valid percentages summed to 100%.

Variables and Analytical Model

The primary variables were the ordinal ratings for Item 5 and Item 9. Class was coded into seven groups and course type into Professional English and Housekeeping Operations. Overall class means across all 28

items were reported only as descriptive summaries. Two levels of analysis were distinguished. The item-response level used frequency-weighted marginal distributions for Item 5 or Item 9 separately. The class level contained seven observations consisting of each class's mean Item 5 and Item 9 scores. The class-level analysis is ecological and cannot recover the pairing of the two items within individual respondents.

Three hypotheses were evaluated within these boundaries. H1 stated that Item 5 rating distributions differed across the seven classes. H2 stated that Item 9 rating distributions differed across the seven classes. H3 stated that class mean Item 5 and Item 9 ratings were positively associated. Course-type comparisons were conducted as secondary analyses. No student-level hypothesis that Item 5 predicts Item 9 was tested because the joint respondent-level distribution was not present in the reports.

SPSS Data Screening and Descriptive Analysis

Data were organized for IBM SPSS Statistics in frequency-weighted long format. Screening verified that every class-item frequency total equaled the reported valid N and that all ratings fell within the 1-5 scale. Descriptive analysis included counts, valid percentages, means, standard deviations, medians, and proportions in the Very Good and combined Good/Very Good categories. Because the data were ordinal and heavily concentrated at rating 5, rank-based tests were used for group comparisons. The accompanying SPSS syntax reproduces the item-specific procedures by selecting one item at a time and applying weight by Frequency.

Measurement Evidence and Identifiability

Cronbach's alpha, corrected item-total correlations, Kaiser-Meyer-Olkin statistics, Bartlett's test, and exploratory factor analysis require covariances among items within the same respondents. Marginal item frequencies do not contain that covariance information. In addition, Item 5 and Item 9 are single-item indicators and therefore cannot possess internal-consistency reliability by themselves. Reliability and construct-validity coefficients were consequently not estimated. This is an identification constraint of the source data, not an omitted statistical step. Future administrations should preserve an anonymous

respondent-by-item dataset if these analyses are required (Field, 2018; Hair, 2019; Pallant, 2020).

Difference, Correlation, and Regression Tests

Kruskal-Wallis tests compared Item 5 and Item 9 rating distributions across the seven classes. The rank-based epsilon-squared statistic was reported as an effect-size estimate. Mann-Whitney tests compared Professional English with Housekeeping Operations. Statistical significance was evaluated at $\alpha = .05$. Pairwise class comparisons were not emphasized when the omnibus test was nonsignificant.

Because Item 5 and Item 9 were not paired within individual students, a student-level Spearman correlation and ordinal logistic regression could not be calculated. An exploratory Spearman correlation was instead computed across the seven class means. A simple class-level linear regression of mean Item 9 on mean Item 5 was also reported to document the aggregate pattern requested in the analytical plan. These results use $N = 7$ classes, are highly sensitive to individual class means, and must be interpreted as ecological descriptions rather than student-level prediction or causal evidence.

Assumption Checks, Effect Sizes, and Reporting Standards

For the frequency-weighted Kruskal-Wallis and Mann-Whitney tests, the principal requirements were independent class groups, ordinal outcomes, and correctly transcribed frequencies. The distributions contained many tied scores, which is expected for a five-category evaluation scale and was accommodated by rank-based procedures. The ecological correlation and regression had only seven cases; therefore residual normality tests and conventional power arguments were not treated as decisive. Coefficients, exact p-values, confidence intervals, and the small number of class-level observations were reported together.

Interpretation emphasized practical magnitude. Epsilon-squared values near .03 indicated small class effects even when mean ratings appeared visually different. Course-type Mann-Whitney effects were summarized with absolute rank-biserial correlations. The aggregate regression included unstandardized and standardized coefficients, R-squared, and a 95% confidence interval, but it was not used to

claim that an individual student's technology rating caused or predicted that student's assessment-alignment rating.

Reproducibility was supported through an SPSS-ready long-format CSV file, an Excel workbook containing class profiles, item summaries, exact frequency cells, and statistical results, and an SPSS syntax file. Class and course codes, valid respondent denominators, and source-report page ranges were retained in the data dictionary. This workflow allows the reported results to be independently checked without constructing artificial respondent records.

Ethical and Interpretive Boundaries

The analysis used anonymous aggregate evaluation reports and contained no student names or identification numbers. Student evaluations may reflect teaching practices, course difficulty, expectations, class climate, attendance, prior proficiency, and response style. The study therefore describes perceived digital integration and assessment alignment, not the causal effect of technology on achievement. Comments in the reports were used only as contextual information and were not coded as a formal qualitative dataset.

Results

The results are reported from exact rating frequencies. All percentages below use valid responses rather than enrollment as the denominator. Statistical coefficients that require respondent-level cross-item covariance are intentionally not reported.

Respondent Profile and Data Quality

The seven reports represented 208 valid responses from 209 enrolled students. Six classes achieved a 100% response rate; PPH5A contributed 33 of 34 enrolled students (97.06%). Across all 5,824 item responses (208 students x 28 items), the weighted overall mean was 4.74. Very Good accounted for 4,599 responses (78.97%), Good for 1,008 (17.31%), Biasa for 160 (2.75%), Tidak Baik for 25 (0.43%), and Sangat Tidak Baik for 32 (0.55%). Class-level overall means ranged from 4.62 in UPW3B and UPW3C to 4.96 in UPW3A.

Table 1.

Respondent profile and overall evaluation

Class	Course	Enrolled	Valid N	Response Rate
PPH5A	Professional English	34	33	97.06%
PPH5B	Professional English	34	34	100.00%
PPH3B	Housekeeping Operations	29	29	100.00%
RPLB	Housekeeping Operations	32	32	100.00%
UPW3A	Professional English	25	25	100.00%
UPW3B	Professional English	27	27	100.00%
UPW3C	Professional English	28	28	100.00%
Total	Two course types	209	208	99.52%

Descriptive Statistics

Item 5 received the highest pooled mean among the 28 items ($M = 4.76$, $SD = 0.59$). Of 208 valid responses, 170 students (81.73%) selected Very Good, 31 (14.90%) selected Good, five (2.40%) selected Biasa, and two (0.96%) selected Sangat Tidak Baik. The combined Good/Very Good proportion was 96.63%. Class means ranged from 4.63 in UPW3B to 4.97 in PPH3B; the Very Good proportion ranged from 70.37% in UPW3B to 96.55% in PPH3B.

Table 2.

Descriptive results for Item 5 and Item 9 by class

Class	Item 5 Mean	Item 5 Very Good	Item 9 Mean	Item 9 Very Good
PPH5A	4.67	75.76%	4.67	72.73%
PPH5B	4.74	79.41%	4.65	73.53%
PPH3B	4.97	96.55%	4.93	93.10%
RPLB	4.78	78.13%	4.75	75.00%
UPW3A	4.96	96.00%	4.96	96.00%
UPW3B	4.63	70.37%	4.63	70.37%
UPW3C	4.64	78.57%	4.57	71.43%

Item 9 also showed a strongly favorable distribution ($M = 4.73$, $SD = 0.59$). A total of 163 students (78.37%) selected Very Good and 37 (17.79%) selected Good, producing a combined positive proportion of 96.15%. Class means ranged from 4.57 in UPW3C to 4.96 in UPW3A. The recalculated PPH5A Very Good percentage was 72.73% (24 of 33), rather than the 70.59% displayed in the source report,

because the analysis used valid responses as the denominator.

Table 3.

Pooled descriptive statistics for the principal items

Variable	N	Mean	SD	Median	Positive
Item 5	208	4.764	0.588	5	96.63%
Item 9	208	4.731	0.585	5	96.15%
All items	5,824	4.737	-	5	96.27%

Measurement Evidence and Data Limitation

Internal-consistency reliability and respondent-level item validity were not estimable from the reports. The available data identify how many students selected each rating for each item, but not whether the same student selected particular ratings across multiple items. Any Cronbach's alpha, corrected item-total correlation, or factor loading generated by artificially aligning these marginal distributions would depend on an invented pairing and would therefore be invalid. Table 4 documents which analyses were supported.

Table 4.

Analytical estimability based on the available data structure

Analysis	Data needed	Available	Decision	Reason
Descriptive	Marginal counts	Yes	Conducted	Exact counts
Alpha/CITC	Paired item data	No	Not run	No covariance
EFA/KMO	Paired item data	No	Not run	No matrix
Student correlation/regression	Paired Q5-Q9	No	Not run	No joint data

Differences Across Classes and Course Types

The Kruskal-Wallis result for Item 5 was not statistically significant, $H(6) = 11.48$, $p = .075$, epsilon-squared = .027. The corresponding test for Item 9 was also nonsignificant, $H(6) = 11.70$, $p = .069$, epsilon-squared = .028. Both effect sizes were small. Thus, although PPH3B and UPW3A showed higher descriptive means than several other classes, the evidence did not meet the .05 threshold for a distributional difference across seven classes. Course-type comparisons were also nonsignificant: Item 5, $U = 4128.50$, $p = .182$, absolute rank-biserial $r = .079$; Item 9, $U = 4111.00$, $p = .189$, absolute rank-biserial $r = .083$.

Table 5.

Frequency-weighted group-difference tests

Outcome	Group	Statistic	p	Effect	Decision
Item 5	7 classes	$H(6)=11.477$	.075	$\epsilon^2=.027$	NS; small
Item 9	7 classes	$H(6)=11.696$	.069	$\epsilon^2=.028$	NS; small
Item 5	Course	$U=4128.50$	.182	$ r =.079$	NS
Item 9	Course	$U=4111.00$	.189	$ r =.083$	NS

Class-Level Association

Across the seven classes, mean Item 5 and Item 9 ratings were strongly and positively associated, Spearman $\rho = .893$, $p = .007$. Classes that evaluated media and technology utilization more favorably also tended to evaluate the alignment between grades and learning outcomes more favorably. This coefficient is based on seven aggregate class means. It does not show that students who selected a high Item 5 rating were the same students who selected a high Item 9 rating.

Table 6.

Exploratory class-level association

Analysis	N	Coefficient	p	Note
Class means Q5-Q9	7	$\rho=.893$	.007	Ecological; not student-level

Exploratory Aggregate Regression

The class-level regression produced R -squared = .945, adjusted R -squared = .935, $F(1, 5) = 86.68$, $p < .001$. The unstandardized slope for class mean Item 5 was $B = 1.039$ ($SE = 0.112$, standardized beta = .972, 95% CI [0.752, 1.326]). The intercept was not significant. The high R -squared reflects the close movement of two favorable class-level evaluation means, but the model contains only seven observations and cannot be interpreted as an individual-level predictive model.

Accordingly, the regression is retained only as a transparent exploratory aggregate analysis. A valid student-level regression would require anonymous paired responses for Item 5 and Item 9 and, ideally, direct learning outcomes such as speaking, practical-performance, or final-course scores.

Table 7.*Exploratory regression of class mean Item 9 on class mean Item 5*

Predictor	B	SE	Beta	p	95% CI
Constant	-0.218	0.532	-	.699	[-1.587, 1.150]
Class mean Q5	1.039	0.112	.972	<.001	[0.752, 1.326]

Discussion

The principal finding is not simply that students rated technology use highly, but that this favorable perception was remarkably consistent across communication-oriented and procedure-oriented vocational courses. Item 5 was the highest-scoring item in the 28-item evaluation, yet neither the seven-class comparison nor the course-type comparison reached statistical significance and both effect sizes were small. This pattern is compatible with research showing that technology can contribute to positive learning experience and engagement in vocational settings (A. Huang et al., 2024a). Similarly, research in hospitality and tourism education has shown that instructional technologies can support content delivery, communication, practice, assessment, feedback, and authentic learning experiences (A. Huang et al., 2024b). The absence of statistically significant class differences, combined with small effect sizes, indicates that the positive pattern was broadly shared rather than confined to one class.

The results also illustrate why descriptive differences and statistical differences must be distinguished. PPH3B and UPW3A produced Item 5 means near 4.96, whereas UPW3B and UPW3C were closer to 4.63-4.64. Nevertheless, the five-point ratings were highly concentrated at the upper end, and the omnibus p-value remained above .05. Reporting only the largest and smallest percentages could exaggerate class differences; the rank-based tests show that the practical class effect was small. This cautious interpretation is particularly important in technology-enhanced education because the educational value of digital tools depends not simply on their presence but on how they are pedagogically integrated into the learning environment (Huang, A et al., 2024b). Research in vocational education similarly suggests that technology-supported learning should be

interpreted in relation to instructional design, learner engagement, and the competencies being developed rather than through technology use alone (Dahalan et al., 2024; Hasrul et al., 2021).

The strong class-level association between digital integration and assessment alignment is educationally plausible. Clear digital demonstrations, accessible materials, interactive practice, visible rubrics, and timely feedback may contribute to a coherent learning experience in which students understand both activities and evaluation. Zhang et al., (2024b) demonstrated that learning experience and student engagement play important roles in connecting digital technology usage with student satisfaction in vocational higher education. Likewise, Kala & Chaubey (2023) found that student engagement was strongly related to perceived learning in tourism-related digital learning environments. These findings provide a conceptual basis for interpreting the positive aggregate relationship observed in the present study. However, the association may also reflect a general class-level response tendency: students who viewed a course positively may have rated many aspects positively. Without paired respondent records and direct achievement measures, these mechanisms cannot be separated.

For institutional quality assurance, the study demonstrates that archived questionnaire counts can support more than a single reported average. Valid-response percentages, full distributions, class comparisons, effect sizes, and transparent data limitations provide a more informative picture. This approach is particularly relevant because research on instructional technology emphasizes the importance of considering pedagogical context and learning processes rather than assuming that the presence of digital tools automatically produces educational benefits (A. Huang et al., 2024b). At the same time, the reports should be redesigned to retain an anonymous respondent-by-item export. Such a dataset would permit legitimate reliability analysis, factor analysis, student-level correlation, multivariable regression, and linkage to direct performance evidence.

Interpretation Across Course Contexts

In Professional English, digital media can make communication tasks more authentic and repeatable through model conversations, tourism workplace simulations, pronunciation resources,

recorded role-plays, interactive quizzes, and rubric-based feedback. The five Professional English classes all produced high Item 5 means, ranging from 4.63 to 4.96. These findings are compatible with research suggesting that technology-supported tourism education can facilitate student engagement and perceived learning by providing interactive and professionally relevant learning experiences (Kala & Chaubey, 2023). In the broader hospitality and tourism education context, digital technologies have also been used to support communication, authentic practice, simulations, assessment, and feedback (A. Huang et al., 2024b).

However, favorable evaluations of technology-supported Professional English instruction should not automatically be interpreted as evidence of improved language proficiency. Technology acceptance and student engagement can contribute to perceived learning, but perceived learning does not necessarily represent objectively measured competence (Kala & Chaubey, 2023). Future analysis should link these perceptions to direct speaking outcomes—fluency, accuracy, interaction, pronunciation, and professional appropriateness—rather than assuming that favorable evaluations equal language improvement.

In Housekeeping Operations, the especially high PPH3B Item 5 mean (4.97) is consistent with the visual and sequential nature of practical instruction. Digital demonstrations can display bed-making sequences, equipment preparation, chemical handling, occupational safety, room inspection, and quality-control checkpoints. RPLB also reported a high mean (4.78). This interpretation is supported by evidence from vocational education indicating that simulations, digital platforms, and technology-enhanced experiential activities can support engagement, motivation, and practical competency development (Dahalan et al., 2024). In tourism education specifically, He & Zhang (2025) found that digital experiential learning positively influenced students' learning and strengthened their ability to use digital technologies in responding to changing industry requirements.

The potential value of digital technology in Housekeeping Operations may therefore arise from its capacity to visualize complex procedures and provide students with opportunities to observe occupational practices

before performing them independently. This is consistent with Huang et al., (2024b), who identified simulations and other instructional technologies as important mechanisms for connecting theoretical content with authentic hospitality and tourism learning experiences. Nevertheless, direct practical rubrics would be needed to establish whether these perceptions correspond to more accurate, safe, or efficient performance.

The seven-class comparison should not be interpreted as an experiment. Classes differed in program, course, semester level, credit load, composition, and possibly schedule conditions. RPLB, for example, was a three-credit class, whereas the other reported courses were generally two credits. Statistical adjustment using aggregate reports cannot eliminate these contextual differences. The class and course analyses therefore identify patterns for follow-up rather than comparative effectiveness rankings. This contextual caution is consistent with the broader literature indicating that the effects of educational technologies are influenced by learning design, student characteristics, instructional objectives, and implementation conditions (Dahalan et al., 2024).

Implications for Assessment and Quality Assurance

The analysis strengthens institutional quality assurance by showing the population, valid N, response rate, denominator, item distribution, central tendency, dispersion, and effect size. This is more informative than displaying only a favorable percentage or overall lecturer average. Where questionnaire results inform lecturer development or appraisal, they should be triangulated with peer observation, course-document review, assessment design, student work, and direct competency evidence. Such triangulation is especially important because student satisfaction and perceived learning represent only some dimensions of technology-enhanced education and should not be treated as substitutes for objectively measured learning outcomes (Kala & Chaubey, 2023).

A more mature evaluation cycle would compare the same indicators across semesters, document changes in the digital learning design, and examine whether subsequent cohorts show stable or improved patterns. This recommendation is compatible with findings

from hospitality and tourism education emphasizing the need to evaluate instructional technologies in relation to their pedagogical functions, educational benefits, and implementation conditions rather than merely documenting whether technology was used (Huang et al., 2024b). In vocational education, sustained technology integration also requires alignment between digital approaches, competency development, instructional strategies, and institutional support (Dahalan et al., 2024).

Institutional dashboards should also separate response rate from score level, because a high mean based on incomplete participation may not represent the entire class. Reporting the full five-category distribution helps decision makers identify ceiling effects, unusual negative responses, and changes that are hidden by a single average. The data should be discussed with lecturers and program managers as evidence for reflective improvement, while maintaining confidentiality and avoiding simplistic rankings of teaching performance.

The descriptive results can guide targeted improvement without turning the questionnaire into a punitive ranking. Classes with comparatively lower Item 5 or Item 9 means may warrant a review of access, task instructions, feedback timing, rubric visibility, scheduling, or the fit between digital tools and course activities. Research suggests that the effectiveness of technology-enhanced learning is closely related to the quality of engagement, learning experience, and pedagogical integration rather than technology adoption alone (Kala & Chaubey, 2023; Zhang et al., 2024a).

The qualitative comments in the reports were predominantly positive, while a small number raised issues such as schedule conflicts and requests for additional workplace conversation simulations. These comments can inform follow-up discussion. These comments can provide useful contextual information for follow-up discussions. In particular, requests for additional simulations are consistent with the literature emphasizing authentic and experiential learning in hospitality, tourism, and vocational education (Dahalan et al., 2024; He & Zhang, 2025; A. Huang et al., 2024b). However, because these comments were limited and were not collected through a systematically designed qualitative instrument, they were not treated as data for formal thematic analysis.

Limitations

The principal limitation of this study is the aggregate marginal structure of the available data. The institutional reports showed the number of students selecting each response category for each questionnaire item but did not preserve anonymous respondent-by-item records. Consequently, the study could not estimate Cronbach's alpha, corrected item-total correlations, factor validity, individual-level Item 5–Item 9 correlations, or student-level regression models.

The ecological correlation and regression were based on only seven class means and may therefore reflect a common class-level response tendency rather than an individual-level relationship. The strong aggregate association between digital integration and assessment alignment should accordingly be interpreted as exploratory evidence rather than proof that an individual student who evaluated digital technology positively necessarily evaluated assessment alignment in the same way.

The study was also limited to one institution, one semester, one lecturer, self-reported evaluations, and different course contexts. The exact digital tools used, frequency and intensity of technology integration, respondent characteristics, and direct academic outcomes were not available. This limitation is important because previous research demonstrates that technology-related educational outcomes may depend on students' engagement, perceived usefulness, learning experience, instructional design, and the context in which technology is implemented (Kala & Chaubey, 2023).

Finally, very high ratings created a ceiling effect that reduced discrimination among classes. Future studies should therefore combine student evaluations with anonymous respondent-level questionnaire data and objective performance indicators. In Professional English, these indicators could include speaking fluency, accuracy, pronunciation, interaction, and professional communication performance. In Housekeeping Operations, direct competency assessments could measure procedural accuracy, safety, efficiency, service standards, and practical task completion. Experimental or longitudinal designs would provide stronger evidence concerning whether technology-enhanced instructional strategies produce measurable learning improvements, as

demonstrated by recent work on digital experiential learning in tourism education (He & Zhang, 2025).

Conclusion

This study analyzed seven lecturer-evaluation reports covering 208 valid student responses in tourism and hospitality vocational education. Media and technology utilization received a pooled mean of 4.76, and perceived alignment between grades and learning outcomes received a pooled mean of 4.73. More than 96% of responses to both items were Good or Very Good. Differences among seven classes and between the two course types were not statistically significant, and the estimated class effects were small.

Class mean ratings of digital integration and assessment alignment were strongly associated, but this result was ecological and cannot establish an individual-level or causal relationship. The most important methodological conclusion is that statistical sophistication must follow the structure of the data. The aggregate reports supported exact descriptive statistics, frequency-weighted group tests, and cautious class-level exploration; they did not support reliability, factor validity, or student-level prediction. Preserving anonymous respondent-level exports and direct performance measures would enable a stronger future evaluation of how digital pedagogy relates to vocational competence.

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