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18 July 2023

Dr. DORACIE B. ZOLETA-NANTES
University President

Thru: **Dr. MARISSA C. ESPERAL**
Vice President for Research, Extension, Production, Development and Innovation

Dear Mesdames,

The CHED-DBM Joint Circular 3, s. 2023 (commonly known as the new instrument for Faculty Re-Classification) requires that Peer Reviewer engagement of faculty members in academic journals receive proper authorization from the President or the concerned Vice President. However, these guidelines were issued towards the end of the coverage period of the 1st Cycle of the Joint Circular (July 1, 2019–July 31, 2023).

As you may be aware, peer review requests from academic journals are normally directly communicated by editors to the peer reviewer and not through the institution where s/he may be affiliated. In consultation with the Institutional Evaluation Committee, I was informed that the CHED provides leeway for additional evidence for Peer Reviewer engagement – that a list of institutionally-recognized peer reviewer engagement would be enough as additional evidence for this cycle.

In this regard, I wish to respectfully seek your **approval in principle** of the participation of faculty members listed in the attached file. Rest assured that the ORS thoroughly screened these reported Peer Reviewer engagement of our faculty members to include only those done with reputable journal publications and book publishers.

We look forward to your usual support on this matter as this will contribute greatly to the career development of our dedicated faculty researchers.

Thank you very much!

Very truly yours,

NICANOR L. GUINTO, PhD
Director, Office of Research Services

Recommending Approval:

MARISSA C. ESPERAL, PhD
Vice President for Research, Extension, Production, Development and Innovation

APPROVED/~~DISAPPROVED~~

Doracie B. Zoleta-Nantes, PhD
University President
JUL 19 2023

SOUTHERN LUZON STATE UNIVERSITY
Office of Research Services

C E R T I F I C A T I O N

This is to certify that the **peer reviewer engagement** of the personnel named below are approved in principle as they have been invited to review journal articles and/or book proposals while being affiliated with the University. For having been directly contacted by Editors of reputable journals and book publishers, their recognized expertise and leadership in their respective areas of research specialization contributed significantly to building the good name of Southern Luzon State University in local and international academic circles.

Name	Academic Rank	College/ Campus	Area of Research Specialization	Journal Name/ Book Publisher that made the request	Coverage/ Readership	Indexed/ Published by:	Tentative Title of the Article/ Book Proposal reviewed	Date when the invitation is received:	Date when the review was sent back to the editor:
AGUDILLA, MARY ANN R.	ASSOCIATE PROFESSOR 4	CAG	BIODIVERSITY, INSECTS, ECOSYSTEM VALUATION	PHILIPPINE JOURNAL OF SCIENCE	International	Scopus	SETTING THE INITIAL CARBON TAX RATE FOR THE CARBON TAX POLICY IN THE PHILIPPINES THROUGH THE SOCIAL COSTS OF CARBON AND WILLINGNESS TO PAY METHODS, AND THE CORRESPONDING BENEFIT-COST ANALYSIS	12/11/2022	1/2/2023
AGUDILLA, MARY ANN R.	ASSOCIATE PROFESSOR 4	CAG	BIODIVERSITY, INSECTS, ECOSYSTEM VALUATION	ACADEMIA-BIOLOGY	International	Academia Publishing	TREE HEIGHT, CANOPY COVER AND LEAF LITTER PRODUCTION OF RHIZOPHORA APICULATA IN BAGANGA, DAVAO, ORIENTAL, PHILIPPINES	1/11/2023	1/27/2023
Alinea, Jess Mark L.	Assistant Professor I	Lucena Campus	TVET, Technical Teacher Education, Curriculum and Instruction	Journal of Technical Education and Training	International	Scopus	The Role of Al-Balqa Applied University in Developing Vocational Education in Jordan	10/26/2021	11/2/2021
Alinea, Jess Mark	Assistant Professor I	Lucena Campus	TVET, Technical Teacher Education,	Journal of Technical	International	Scopus	Training-based Assessment of Employees Performance: A Case Study of Bahir Dar	12/27/2021	1/5/2022

			Communication	Applied Linguistics					
Guinto, Nicanor L.	Associate Professor III	College of Arts and Sciences	Sociolinguistics, Discourse Analysis, Communication	rEFLections	International	Scopus/ King Mongkut's University, Thailand	Filipino Non-Native English-Speaking Teachers and the Bias in Their Own Backyard	07/10/2023	07/19/2023
Maaliw, Renato III R.	Associate Professor II	CEN	Computer Vision, Machine Learning, Data Analytics	Cogent Engineering	International	Scopus, Web of Science, ASEAN Citation Index	Integrating Video Feedback Into Architectural Design Education to Engage Diverse Learning Styles	3/27/2023	4/20/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Machine Learning, Computer Vision, Data Analytics	Healthcare Analytics (Elsevier)	International	Scopus, Web of Science, ASEAN Citation Index	Prediction of Systolic and Diastolic Blood Pressures Using Machine Learning	5/4/2023	5/16/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics	Engineering (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Using ARIMA to Predict the Growth in the Subscriber Data Usage	11/4/2022	11/14/2022
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Analytics	Sensors (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Missing Traffic Data Imputation with a Linear Model Based on Probabilistic Principal Component Analysis	12/2/2022	12/10/2022
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	Sensors (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Using Machine Learning on V2X Communications Data for VRU's Collisions Predictions	12/23/2022	12/26/2022
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics	Applied Science (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Performance Predictions of Sci-Fi Films via Machine Learning	1/31/2023	2/5/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	Sustainability (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Thermal Images Classifications of Solid Wastes with Deep Convolutional Neural Networks	2/15/2023	2/25/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	Sustainability (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	Static Evaluation of a Midimew Connected Torus Network for Next Generation Supercomputers	3/2/2023	3/13/2023
Maaliw,	Associate	College of	Computer Vision,	Journal of	International	Scopus, Web of	Machine-Learning-Based Composition	3/23/2023	4/1/2023

Renato III R.	Professor II	Engineering	Machine Learning, Data Analytics, Computer Engineering	Nuclear Engineering (MDPI)		Science, ASEAN Citation Index	Analysis of the Stability of V–Cr–Ti Alloys		
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	Mathematics (MDPI)	International	Scopus, Web of Science, ASEAN Citation Index	A Federated Personal Mobility Service in Autonomous Transportation	5/19/2023	5/29/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	IJERPH (MDPI)	International	Scopus, Web of Science,	Machine Learning in Predicting Severe Acute Respiratory Infection	6/6/2023	6/11/2023
Maaliw, Renato III R.	Associate Professor II	College of Engineering	Computer Vision, Machine Learning, Data Analytics, Computer Engineering	Journal of Theoretical and Applied Electronic Commerce Research	International	Scopus, Web of Science, ASEAN Citation Index	Unveiling the Power of ARIMA, Support Vector Machine and Random Forest Regressors for the Future of Dutch Employment Market	6/14/2023	6/23/2023
Mabunga, Zoren P.	Instructor 1	College of Engineering	Artificial Intelligence, Electronics and Communication Engineering, Internet of Things	2022 IEEE 18th International Colloquium on Signal Processing & Applications (CSPA 2022)	International	Scopus	Semi Autonomous Detection of Bite Points for a Surgical Needle	2/24/2022	3/7/2022
Mabunga, Zoren P.	Instructor 1	Engineering	Artificial Intelligence, Electronics and Communication Engineering, Internet of Things	IEEE International Conference on Mobile Networks and Wireless Communications (ICMNWC-2021)	International	Scopus	1. A Survey of Vulnerability Management Using Machine Learning Techniques, 2. An Adaptive Algorithm based on Interference Aware Cooperative Energy Efficiency Maximization for 5G UltraDense Networks, 3. GRAMIN GENIE-A SMART KIOSK, 4. An Automated Deep Learning Model for Detecting Sarcastic Comments,	7/2/2021	8/12/2021

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YAO, CLAIRE ANN M.	ASSISTANT PROFESSOR IV	CABHA MAIN	BUSINESS ENTREPRENEURSHIP, PRODUCT DEVELOPMENT, TOURISM, LEISURE, AND HOSPITALITY	PATHWAY TO REFEREED JOURNAL PUBLICATION IN THE FIELD OF BUSINESS	Local	INSTITUTIONAL	PROBLEMS ENCOUNTERED BY MSME'S IN TAGUIG CITY AND THE ACTION TO COUNTER THE POSSIBLE EFFECTS OF ASEAN INTEGRATION: A SITUATION ANALYSIS	3/24/2020	4/4/2020
YAO, CLAIRE ANN M.	ASSISTANT PROFESSOR IV	CABHA MAIN	BUSINESS ENTREPRENEURSHIP, PRODUCT DEVELOPMENT, TOURISM, LEISURE, AND HOSPITALITY	PATHWAYS TO REFEREED JOURNAL IN THE FIELD OF BUSINESS	Local	INSTITUTIONAL	MANYAMAN MANGAN QUENI (DELICIOUS TO EAT HERE):SUCCESS FACTORS OF SELECTED RESTAURANT ENTREPRENEURS IN PAMPANGA	4/16/2020	4/21/2020

Issued this 19th day of July 2023 at Southern Luzon State University, Lucban, Quezon.

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Reviewer Invitation for Integrating video feedback into architectural design education to engage diverse learning styles

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Mon, Mar 27, 3:02 PM

Dear Dr Maaliw,

I would like to invite you to review a manuscript entitled "Integrating video feedback into architectural design education to engage diverse learning styles" which has been submitted to Cogent Engineering. This involves completing a scorecard and submitting your recommendation, with the entire process conducted via an easy online system. I would be grateful for your expertise in assessing this article.

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Reviewers should not recommend rejection of manuscripts purely on the grounds of perceived importance. This approach allows for a more objective consideration of negative findings, replication studies and new and experimental ideas. For more information about our criteria for publication, expectations of reviewers and our review process please visit the website at https://www.cogentoa.com/reviewers. If there is a conflict of interest that will prevent you from providing an unbiased view please let me know as soon as possible.

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Please find the abstract for the manuscript below for your information. The full paper will be available to read on the online system if you accept the invitation.

This study explores the use of video-based feedback to evaluate the performance of undergraduate students with various learning styles in the field of architectural engineering. The study involved 26 participants from Al al-Bayt University who were enrolled in a four-week summer workshop. The participants' preferred learning styles were identified using Kolb's Learning Style Inventory, which included divergent, assimilation, convergent, and accommodator learning styles. The study employed an experimental group and a control group. The experimental group received video feedback on their assignments in phase 2 of the study, while the control group received in-person evaluations. In phase 3, students in the control group received video-based feedback for their stage 2 assignments. The researchers analyzed the performance scores of both groups and assessed their perceived feedback quality using a formative feedback perception scale. The results indicate that video-based feedback significantly impacted feedback development and understandability during the design process. The use of video-based feedback showed statistically significant differences in the performance scores of the experimental and control groups. Additionally, the study revealed that students in both groups perceived the video feedback as of high quality. Based on the outcomes of the study, it is recommended that instructors use videos in feedback sessions during the architectural design process. The study provides valuable insights into the effectiveness of video-based feedback in enhancing learning outcomes for undergraduate students in architecture engineering, and the findings have practical implications for educators and instructional designers in the field.

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If possible, I would appreciate receiving your review 14 days from the date of accepting this invitation.

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On behalf of
Sanjay Kumar Shukla, PhD, Senior Editor

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Dear Dr Renato Racelis Maaliw,

Thank you for agreeing to review manuscript COGENTENG-2023-0136, "Integrating video feedback into architectural design education to engage diverse learning styles", for Cogent Engineering.

To download the paper, please click this link: https://www.editorialmanager.com/cogenteng/l.asp?i=502348&l=FDP5ZIRT *

Your review of this paper is due by Apr 10, 2023. If you are unlikely to be able to provide comments by this date, please contact the Editorial Office who will be happy to help.
You can submit your review at https://www.editorialmanager.com/cogenteng/: your username is Your username is: Renato Racelis Maaliw and your password can be set at this link: https://www.editorialmanager.com/cogenteng/l.asp?i=502349&l=8Y1FE4M6.

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With kind regards

Sanjay Kumar Shukla, PhD
Senior Editor
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COGENTENG-2023-0136
"Integrating video feedback into architectural design education to engage diverse learning styles"
Original Submission

Renato Racelis Maaliw (Reviewer 3)

Reviewer Recommendation Term:	Unsound or fundamentally flawed
Custom Review Question(s):	**Response**
As a thank you and to acknowledge the contribution of our reviewers, the journal may publish a list of the names of those who have reviewed at the end of the year. This will not be linked to any specific paper and will only be done if the list of reviewers is long enough to protect the anonymity of the review process for individual papers. If you would prefer for your name **not to be included** in a published list of reviewers, please indicate this below.	Do not include my name
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I confirm that I have the necessary subject knowledge and expertise to review this article, and have no conflict of interest that would prevent me from offering an unbiased review.	Yes
Would you be willing to review a revision of this manuscript?	Yes
Title, Abstract and Introduction - overall evaluation	Sound with minor or moderate revisions
Methodology / Materials and Methods – overall evaluation	Unsound or fundamentally flawed
Objective / Hypothesis – overall evaluation	Sound with minor or moderate revisions
Figures and Tables – overall evaluation	Sound with minor or moderate revisions
Results / Data Analysis – overall evaluation	Sound with minor or moderate revisions
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Conclusions – overall evaluation	Unsound or fundamentally flawed
References – overall evaluation	Sound with minor or moderate revisions
Compliance with Ethical Standards – overall evaluation	Sound
Writing – overall evaluation	Sound with minor or moderate revisions
Supplemental Information and Data – overall evaluation	Sound with minor or moderate revisions
Comments to the author	1. Although small sample size is stated as limitation, it is better to balanced the number of participants in terms of sex (76.92% to 23.08%) isn't proportion that can affect the results. 2. Why Kolb's LSI was selected. Remember there are hundreds of learning styles models existing in the literature. The paper needs to justify why the model was chosen over the others. There is no clear comparison or clear benchmarking why it is the most appropriate for this research? Other learning style models are Felder-Silverman which is a better fit for technical program such as architecture. 3. Figures can be improved and suggest to be in HD form (1000px or more), so as not to lose image quality. 4. Why a staircase activity is selected? State the reasons why? 5. Literature review is not exhaustive enough, including the pressing contribution of the research to the body of science (very limited) 6. If the in-person feedback came from a well-beloved teacher or outstanding teacher, will it be more effective? Remember, students respond to characters of instructors. 7. Do participants have equal or similar capability. Remember also there are students who are fast and slow learner. It should be placed in an equal ground. 8. What is the main reason why video feedback is effective than in-person? This is contrary to most researches that needs to be explained clearly. Elaborate more on this. 9. The research needs to answer this important query. Thank you.
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Integrating video feedback into architectural design education to engage diverse learning styles
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Integrating video feedback into architectural design education to engage diverse learning styles

--Manuscript Draft--

Full Title:	Integrating video feedback into architectural design education to engage diverse learning styles
Manuscript Number:	COGENTENG-2023-0136
Article Type:	Research Article
Keywords:	Integrated learning; Video feedback; Learning styles; Scientific research; Architectural Design; Education
Manuscript Classifications:	30.2.5 Design; 50.2.2.9 Educational Psychology; 50.3.1 Architecture; 50.7.11 Education Studies; 50.7.12 Higher Education; 50.7.4 Classroom Practice; 60.2.7 Design
Abstract:	This study explores the use of video-based feedback to evaluate the performance of undergraduate students with various learning styles in the field of architectural engineering. The study involved 26 participants from Al al-Bayt University who were enrolled in a four-week summer workshop. The participants' preferred learning styles were identified using Kolb's Learning Style Inventory, which included divergent, assimilation, convergent, and accommodator learning styles. The study employed an experimental group and a control group. The experimental group received video feedback on their assignments in phase 2 of the study, while the control group received in-person evaluations. In phase 3, students in the control group received video-based feedback for their stage 2 assignments. The researchers analyzed the performance scores of both groups and assessed their perceived feedback quality using a formative feedback perception scale. The results indicate that video-based feedback significantly impacted feedback development and understandability during the design process. The use of video-based feedback showed statistically significant differences in the performance scores of the experimental and control groups. Additionally, the study revealed that students in both groups perceived the video feedback as of high quality. Based on the outcomes of the study, it is recommended that instructors use videos in feedback sessions during the architectural design process. The study provides valuable insights into the effectiveness of video-based feedback in enhancing learning outcomes for undergraduate students in architecture engineering, and the findings have practical implications for educators and instructional designers in the field.

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Integrating video feedback into architectural design education to engage diverse learning styles

Isra M. Al-Shdaifat [1],Laith M. Obeidat [2], Shouib Nouh Mabdeh [2,*], Loai Alzoubi [1], Sukina H. Al-Kazaleh[3]

1 Department of Architecture Engineering, Al Al-Bayt University, Mafraq 25113, Jordan
2 Department of Architecture, Jordan University of Science and Technology, Irbid 3030, Jordan
3 Department of Mathematics, Al Al-Bayt University, Mafraq 25113, Jordan

Abstract: This study explores the use of video-based feedback to evaluate the performance of undergraduate students with various learning styles in the field of architectural engineering. The study involved 26 participants from Al al-Bayt University who were enrolled in a four-week summer workshop. The participants' preferred learning styles were identified using Kolb's Learning Style Inventory, which included divergent, assimilation, convergent, and accommodator learning styles. The study employed an experimental group and a control group. The experimental group received video feedback on their assignments in phase 2 of the study, while the control group received in-person evaluations. In phase 3, students in the control group received video-based feedback for their stage 2 assignments. The researchers analyzed the performance scores of both groups and assessed their perceived feedback quality using a formative feedback perception scale. The results indicate that video-based feedback significantly impacted feedback development and understandability during the design process. The use of video-based feedback showed statistically significant differences in the performance scores of the experimental and control groups. Additionally, the study revealed that students in both groups perceived the video feedback as of high quality. Based on the outcomes of the study, it is recommended that instructors use videos in feedback sessions during the architectural design process. The study provides valuable insights into the effectiveness of video-based feedback in enhancing learning outcomes for undergraduate students in architecture engineering, and the findings have practical implications for educators and instructional designers in the field.

Keywords: Integrated learning, Video feedback, Learning styles, Scientific research, Architectural Design, Education

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1 Introduction

Design is a process that is both multidimensional and complex, involving the integration of science and art to address various concerns related to the built environment (Abowardah and Khalil 2016). To facilitate this process, design educators must provide clear and informative feedback during desk and pin-up critiques (Mahmoodi 2001), and encourage students to participate in workshops and reflective activities to gain hands-on knowledge of the design process. However, the COVID-19 pandemic has posed significant challenges to design education, as design-based criticism is a crucial event in design studios that facilitates direct interactions between teachers and students. To overcome these challenges, communication between instructors and students must be supported by a variety of visual illustrations, including sketches, sections, simulations, plans, digital models, mock-ups, and animations related to the design task. In response to the pandemic, design courses have been conducted virtually, highlighting the potential of using video-based feedback as an alternative method for providing feedback to design students (Sevgül & Yavuzcan 2022). Video-based feedback allows instructors to record their feedback, which students can then view at their convenience. This study examines the impact of using video-based feedback as an alternative means of communication between instructors and students in design education after the pandemic. The study found that using video-based feedback positively impacted students, based on their reactions to their instructors' comments. The results of this study suggest that video-based feedback provides effective communication between instructors and students, which can help students pay closer attention to their instructors' feedback.

2 Architectural Design Process in Context of Kolb's Experiential Learning Theory

According to the Royal British Institute of Architecture, the design process is a "two-dimensional process," depicted in Figure 1. The 1st dimension (1-D) is the decision-making process, while the 2nd dimension (2-D) is the sequential design stage (RIBA 1967). According to Abowardah and Khalil (2016), the vertical timeline formulation of this 2D process highlights the sequential measures architects take during the design process to identify issues and develop solutions to provide good architectural results. Additionally, this horizontal formulation represents the iterative procedures involved in decision-making at each architectural design stage (synthesis, analysis, evaluation, and decision-making). However, this process could be approached in slightly different ways depending on students' preferred learning styles based on their personal characteristics (Fox and Bartholomae 1999; Newton and Wang 2022). According to Kolb's Experiential Learning Theory, there are four different learning styles (Figure 2): convergent, divergent, accommodating, and assimilating. Convergent learners handle technical issues over interpersonal or social issues.

On the other hand, divergent learners are more interested in brainstorming than acting. Additionally, assimilating prioritizes a theory's logical coherence over its real-world applications. When completing the tasks, assimilating and accommodating students rely on others for knowledge instead of their technical analyses.

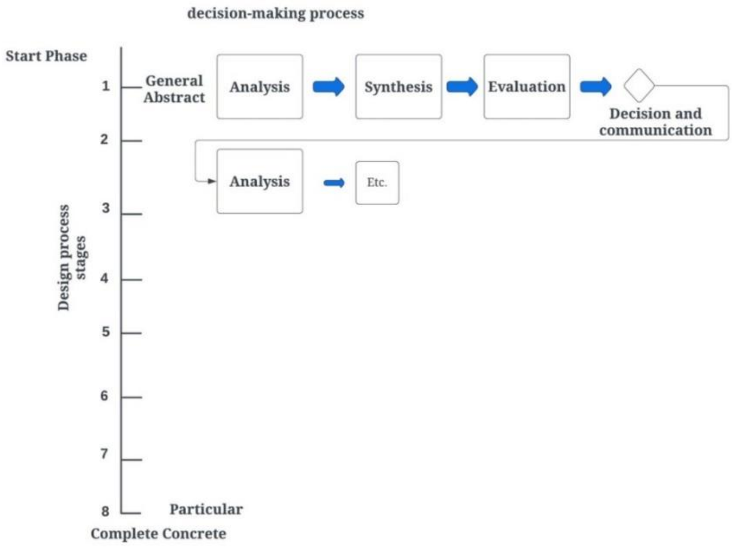

Figure1: Two-dimensional process (RIBA handbook, 1973)

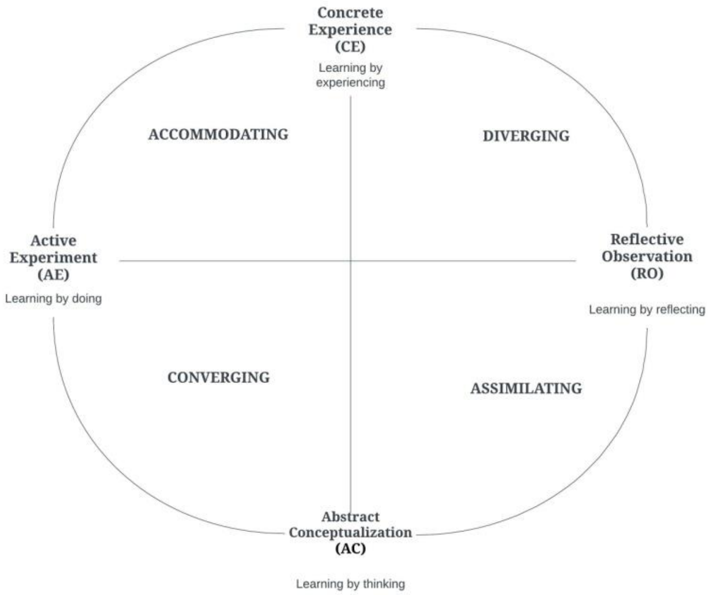

Figure 2: Four learning modes of Experimental Learning Theory (Kolb, 2014)

Moreover, Kolb's Experiential Learning Theory is the foundation for the "learning by doing" concept and defines learning as a four-stage cyclical process (Kolb, 2014). This procedure begins with learning through experience, followed by reflection, action, and further reflection (Demirbaş and Demirkan 2003). This process follows a loop because fresh experiences lead to more learning (Whitcomb 1999; Kolb 2014). In this cycle, self-reflection is the most useful learning strategy (Demirkan and Demirbaş 2008; Oh et al., 2013).

In accordance with Kolb's experiential learning framework, an experimental study by Naguib (2019) ensures the essential role of the field trip in teaching architectural studios. The experiment results show that the students' understanding and recognition of the issues of the given design problem become much more thorough after the field trip to a similar real architectural project. After the field visit, students could effectively re-assess their pre-visit designs, which were done before the field visit, overcome their mistakes, and achieve remarkable progress toward the design solutions. Djabarouti and O'Flaherty (2019), refer that it is crucial to include experiential learning and hands-on exercises in educational built heritage courses for architecture students. Such experiments impart knowledge via videos with professional verbal assistance, followed by practical exercises and assignments. They notice that the students' ability to comprehend the intricacies of building materials has improved through experiential and hands-on learning. However, this method can impact the capacity of economic and logistical architectural institutions (Djabarouti and O'Flaherty 2019; Newton and Wang 2022).

3 Design Studio and the quality of the feedback

In the realm of architecture education, the design studio plays a crucial role as a fundamental learning environment in many academic institutions. It is recognized as a distinctive classroom setting that adheres to specific pedagogical approaches, as stated by Lueth (2008). More specifically, the design studio serves as a laboratory where specialized teaching techniques and educational approaches are employed to help students develop the professional knowledge and expertise necessary to identify and solve design problems, as noted by Ilgaz (2009) and Orbey and Erdodu (2021). As Demirbaş and Demirkan (2003) point out, the design studio is the most important component of the design curriculum, as it integrates knowledge and skills from other courses taught throughout the curriculum. Thus, a close relationship between instructors and students is required, characterized by diverse communication and active teaching and learning. This relationship is acknowledged in contemporary architecture's design thinking approaches and various teaching and learning methods (Mahmoodi, 2001). According to Ashton (1998), vocal exchanges between instructors and students are critical to learning. Demirbaş and Demirkan (2003) suggest that mutual reflection activities involving students and teachers should create a criticism-filled environment that encourages learning. Nicol and Macfarlane-Dick (2006) note that feedback is essential for students to learn about their performance. In this regard, Vasilyeva et al. (2008) argue that feedback that identifies students' strengths and weaknesses is essential to maximize the effectiveness of the teaching process.

Feedback can be directive or evaluative; directive feedback is future-focused (what needs to be improved), whereas evaluative feedback is past-focused (what has been done) Nash et al., 2018). Beyond this, feedback must meet certain requirements to be successful—namely, it must be well-received and valued by both students and teachers. Additionally, feedback consistency and quality should be considered, and the feedback design must be easily understood and implemented by the students (Henderson et al., 2019). Technical feedback aspects include the feedback's timeliness, medium, and content, which all increase students' engagement and satisfaction (O'Donovan et al., 2021). It has been widely agreed that students highly value constructive criticism and feedback they receive from their instructors (Eom and Ashill 2016). In the context of architectural education, the instructor must have the proper skills and techniques to increase their role in the learning process by providing clear, informative feedback that accounts for students' different learning styles (Yazdani et al., 2022).

The evaluation of feedback quality in educational settings relies on several factors, including the frequency of feedback use, the degree of shared responsibility between the student and instructor, and the students' readiness to accept criticism, as highlighted by Winstone et al. (2017). O'Donovan et al. (2021) suggest that feedback quality can be enhanced from the recipients' perspective through its function in assessment and design and the learners' interactions with tutors and peers. To this end, verbal and video feedback can be utilized in various sports and art courses to diversify skill sets, according to Deshmukh (2020). Feedback is an integral part of the architecture learning process, provided through various means such as the curriculum, written assignments, and verbal discussions. Nonetheless, as Smith (2021) suggests, visual feedback is of paramount importance. The development of the studio culture is influenced by several factors, including the materials used in a project's development, the organization of the course, the tools utilized, and the communication and critique methods employed among students, instructors, and peers. According to Smith (2021), both undergraduate and postgraduate architectural students typically desire more visual feedback.

Researchers have highlighted the importance of video streaming in online courses by documenting instructional activities that facilitated more effective teaching (Ketchum et al., 2020; Renzella and Cain 2020; Rahmane et al., 2022; Sevgül and Yavuzcan 2022). Additionally, these studies demonstrated the significant role of alternative feedback modes, including video, audio, podcasts, and screencast feedback, and using these feedback formats can improve the feedback quality (Killingback et al., 2019; Hassanpour and Şahin 2021). These researchers concluded that using the most recent tools to teach architecture students benefited students greatly during the design process.

Research studies have shown that the use of videos as a feedback technique has a significant impact on how students perceive and understand feedback and how feedback can develop and support the learning process (e.g., Hounsell & McCune, 2005; Orsmond et al., 2013). In particular, undergraduates in the Information Security and Ethics course have found that using videos as a feedback technique has a more significant impact than the traditional feedback method (Dong & Chen, 2017). These students used the screen recording of the instructor–student discussion session as a form of video feedback, which allowed them to revisit and reflect on the feedback they received. The screen was split into important sections, including students' work, text feedback, the instructor's face, and a moving, highlighted cursor, which helped focus students' attention on specific aspects of the feedback (Dong & Chen, 2017).

Furthermore, the online critical method has gained popularity because academic architectural institutions began offering many of their courses on the internet during the COVID-19 pandemic. During the early lockdown stages, some professors utilized online tools like Zoom, which let them comment or sketch on a shared screen. Such methods increased students' sense of engagement or disinhibition, and they commented and actively participated in these drawing sessions (Sun, Wang et al. 2021). Distance learning has accelerated the proliferation of several representative techniques, including the merging of drawing and photography techniques, physical models and 3D models, and the use of programs like AutoCAD or Revit to simultaneously perform necessary modifications (Santos et al., 2021).

Yiğit and Seferoglu (2020) conducted a study in the field of computer education and instructional technologies (CEIT) to examine the use of video-based feedback techniques. The study involved randomly assigning students to control and experimental groups, with the control group receiving face-to-face feedback in verbal, drawing, and text formats, while the experimental group received video feedback. The study used an experimental research methodology with two different research designs. The first design used the "formative feedback perception scale," proposed by Şat (2017), to measure the impact of video feedback on students' perceived feedback quality. The second design was based on the work of Demirbaş and Demirkan (2003), and received ethical approval from the University Ethics Committee (ID:........). Parallel strategies were used to determine the effectiveness and tutor-related opportunities offered by the video-based feedback technique.

Technology has improved communication between teachers and students, particularly during the COVID-19 pandemic, by catering to the different learning styles of students. Video feedback has shown promise in enhancing feedback quality and improving students' learning experience. However, further research is needed to explore the effectiveness of video feedback in various disciplines and contexts and identify best practices for its implementation in higher education. This study aims to evaluate the effectiveness of using video feedback to teach architectural design students while considering their different learning styles. The importance of this topic has increased with the return to face-to-face classroom sessions, and there is a continuous need to utilize video-based feedback to enhance interactions between teachers and students in a way that accommodates the various learning styles suggested by Kolb.

4 Methods

4.1 Participants

In the 2021-2022 academic year, this study was conducted at Al al-Bayt University in Jordan that focused on first-year students in the Department of Architectural Engineering. The study included a total of 26 participants aged between 19 and 20 years old, equally divided between a control group and an experimental group, with 13 participants in each group. The gender distribution in both groups was ten women (76.92%) and three men (23.08%). The study was carried out during the summer studio sessions, and participation in the study was voluntary.

4.2 Experiments Design

Learning Style Inventory (LSI)

First, the Learning Style Inventory (LSI), Version 3.1, designed by Kolb (2005), was used to determine the learning preferences of the selected sample. The LSI test was used to determine each participant’s scores for concrete experience (CE), abstract conceptualization (AC), reflective observation (RO), and active experimentation (AE). Following this procedure, the precise learning styles of the respondents were confirmed to be accommodating, assimilating, diverging, and converging by subtracting the CE scores from the AC scores and the RO scores from the AE scores for every student, see table 1.

Problem Design

Students participating in the study were asked to design a staircase for a two-story villa project. Two main phases during three consecutive design studios were needed to conduct the study, as described below.

- Phase 1: First studio session

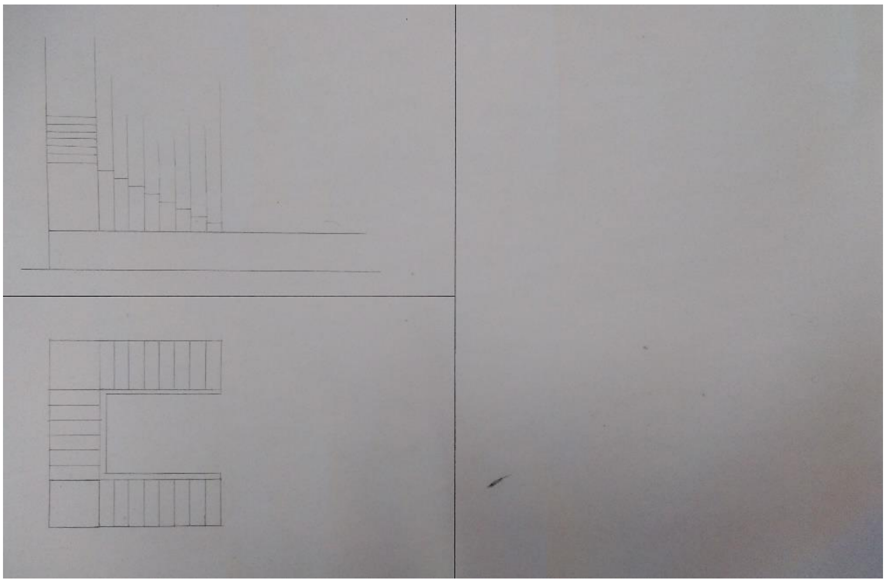

Figure 3: Product of Phase 1 (first studio session exercise of Student No. 7 experimental group)

During In the first phase of this study, students were introduced to the project description, followed by a 60-minute lecture on the design guidelines, requirements, and technical drawings for a staircase. After a break, students were given the remainder of the studio time to individually work on designing the staircase. To provide students with a better understanding of the design problem, they were provided with various architectural representations of the existing villa, including a 3D isometric drawing and a 2D architectural section drawing. Students were allowed to design a U-type, L-type, or wide U-type staircase within the constraints of the specified requirements. At the end of the studio, students submitted their design representations, including sketches, two architectural plans for the ground and first levels, and one architectural section at a 1/50 drawing scale (as shown in Figure 3). After the studio session, the students’ designs were evaluated to assess their performance in this stage.

- Phase 2: Second studio session

In the first part of the design session, the control group received face-to-face feedback in the form of verbal comments, drawings, and texts, while the experimental group received video feedback. The video feedback was developed using screen recorder software and had a resolution of 1920×1080, lasting for 4-5 minutes figure 4. During the feedback session, the instructor displayed the students’ assignments on a computer and used an annotation tool to provide visual feedback. The instructors also presented a few visual examples of similar designs related to the students’ assignments using Microsoft PowerPoint to record on-screen activities. Each student was given a nickname to ensure anonymity during data collection, and then they completed the formative feedback perception scale, which was analyzed as part of the study's quantitative component. The instructor anticipated that the staircase design would be presented clearly and properly, using the specified components.

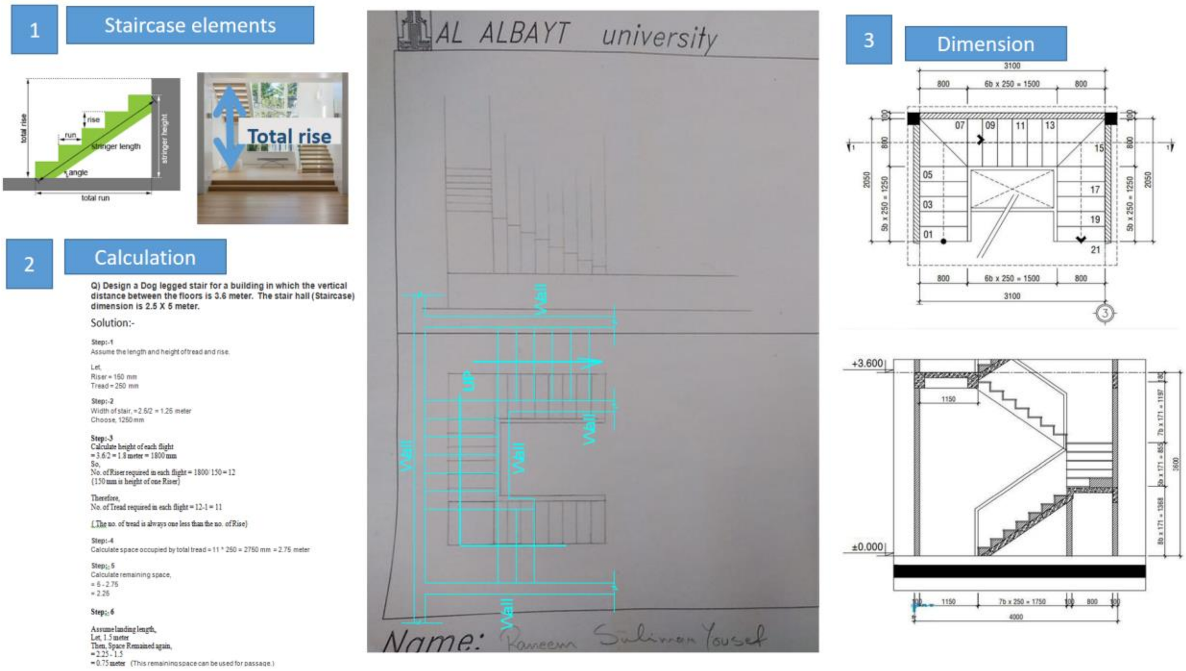

Figure 4: Video feedback example

After receiving feedback, it was assumed that the participants had obtained the necessary knowledge on how to design a staircase, including both the technical and communicative aspects of the architectural representation requirements. They were then instructed to create new versions of their designs, which met the same requirements as the previous design, including two architectural plans from two distinct floor levels and one architectural section, all drawn to a 1/50 scale (Figure 4). All the students' drawings were collected and evaluated at this stage to assess their performance outcomes.

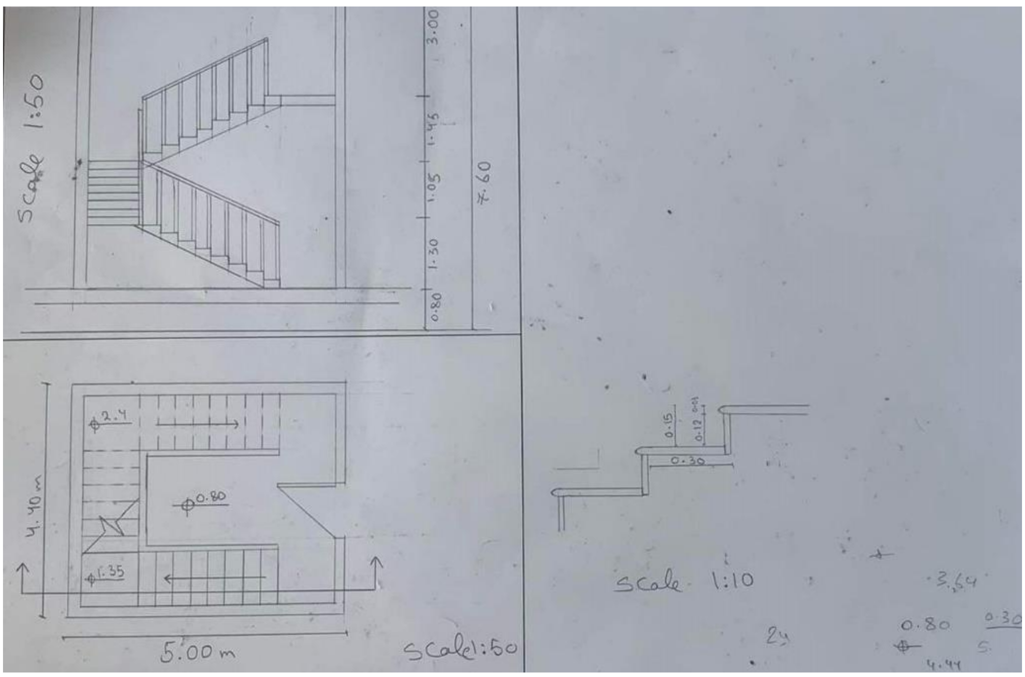

Figure 5: Product of Stage 4 (second studio session exercise of Student No. 25)

Assessment instrument

The assessment of student performance was based on the architectural representation media of their staircase designs. These included the students' 3D and 2D architectural drawings during both design sessions. The focus of evaluation was on the outcomes of the designs rather than the methods used. A scoring instrument developed by Demirbaş and Demirkan (2003) was used to evaluate the designs. This instrument was designed to evaluate students' sketches in accordance with the design requirements and was used to evaluate both the first and second phases of the study as they had similar requirements. These two phases were evaluated using the same rating scale developed by Demirbaş and Demirkan (2003). Demirbaş and Demirkan (2003) developed a scoring instrument to evaluate students' sketches in architectural design courses. The instrument consists of a rating scale that assesses the quality of the sketches in terms of three main criteria: (1) the design concept and its relationship with the design problem; (2) the spatial organization and composition of the design elements; and (3) the graphic quality of the sketches. The rating scale uses a five-point Likert scale, ranging from 1 (poor) to 5 (excellent), to assess each of the three criteria. Each criterion is further divided into sub-criteria, and each sub-criterion is also rated on a five-point scale. The final score is calculated by adding up the scores for each criterion and sub-criterion and averaging them. In the study being discussed, the same rating scale developed by Demirbaş and Demirkan was used to evaluate the quality of the students' sketches in both the first and second phases of the design project. The focus was on the quality of the outcome rather than the process of designing the staircase.

Formative feedback perception scale (FFPS)

After the study's second phase, students in the experimental and control groups completed the Formative Feedback Perception Scale to determine their perception of the quality of feedback received. The Formative Feedback Perception Scale (FFPS) is a tool used to measure students' perceptions and attitudes towards feedback. This questionnaire was developed by Şat (2017) to investigate the impact of video feedback on student perceptions of feedback quality. The FFPS consists of 25 items divided into three sub-factors: understandability, development, and encouragement. The understandability sub-factor measures the clarity of the feedback provided, while the development sub-factor measures the feedback's ability to help students improve their work. The encouragement sub-factor measures the degree to which the feedback motivates and engages students. The sub-factors identified in the Formative Feedback Perception Scale correspond to feedback quality indicators that are commonly found in the literature. For example, the sub-factor of "development" aligns with feedback that provides opportunities for improvement and revision. Similarly, the sub-factor of "understandability" relates to feedback that is clear and comprehensible. Lastly, the sub-factor of "encouragement" corresponds to feedback that promotes effective engagement with the material being studied. These quality indicators were identified by Yiit and Seferoglu in 2020.

Research has shown that effective feedback can significantly impact student learning and achievement. In particular, clear, specific, and actionable feedback can help students improve their work and achieve their learning goals (Hattie and Timperley, 2007). The FFPS is one tool that can be used to evaluate the quality of feedback provided to students and identify areas for improvement. Overall, the FFPS is a valuable tool for measuring student perceptions of feedback quality, and can help educators and researchers understand how feedback is perceived and used by students.

The reliability coefficient for the 5-point Likert scale was found to be 0.93 for the total scale, with individual sub-factor reliability coefficients of 0.92, 0.88, and 0.83 for understandability, development, and encouragement, respectively.

5 Results and Discussion

5.1 Student learning styles

The Kolb's LSI test was used to identify the most common learning styles used by first-year design students, which is a widely used tool for characterizing learning styles. When the study was conducted with two different groups of first-year design students, the results revealed a specific distribution of learning styles among these students. Based on the results of the Learning Style Inventory (LSI) (Table 1), all students were classified according to their learning style preferences. The experimental and control groups had no divergent students, while the majority preferred a converging learning style, around 77% in the experimental group and 61% in the control group. In the experimental group, more students preferred an accommodating learning style, 15.38%, compared to 7.69% in the control group. On the other hand, fewer students preferred the assimilating learning style in the experimental group compared to 30.77 % in the control group. Demirbas and Demirkan (2003) reported similar findings, indicating that many first-year students preferred converging (33%) and assimilating (31.8%) learning styles.

Table 1: Distribution of all students among the four learning styles

Learning styles	Experimental group		Control group	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Accommodating	2	15.38	1	7.69
Diverging	0	0	0	0
Assimilating	1	7.69	4	30.77
Converging	10	76.93	8	61.54
Total	**13**	**100**	**13**	**100**

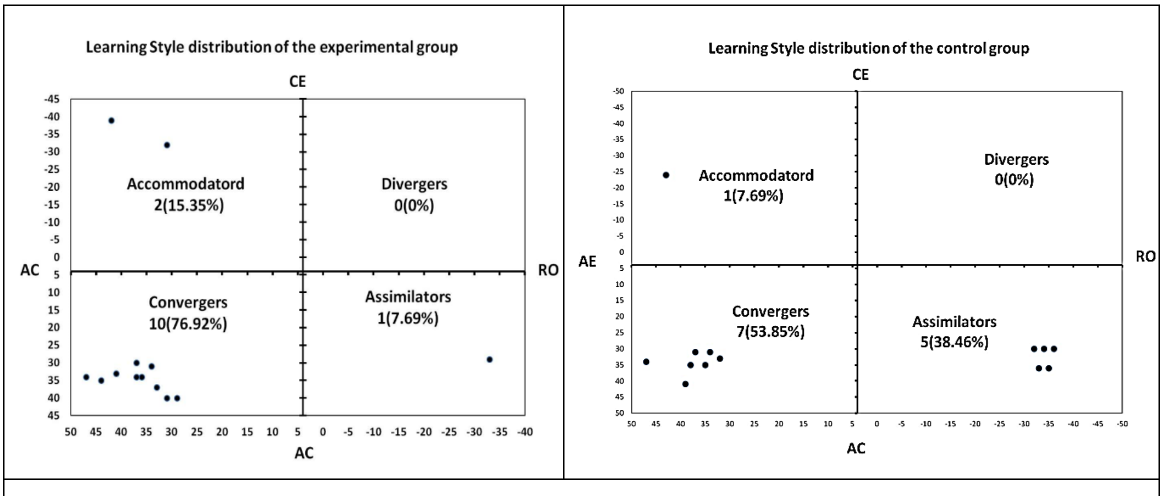

Figure 6: Learning style distribution of the experimental group and the control group

5.2 Learning style inventory scores of students

The scores of the learning style inventories used by both groups were computed, and Table 2 displays the mean, standard deviation, and range values for the six components (CE, RO, AC, AE, AC-CE, and AE-RO). The experimental and control groups showed approximately similar values.

Table 2: Average raw scale and range values of the two groups

The experimental group (KV)	**RO**	**AC**	**AE**	**CE**	**AC-CE**	**AE-RO**
Mean (std. dev.)	25.08 (5.63)	33 (5.74)	36.31 (4.62)	24.77 (4.89)	8.23 (8.90)	11.23 (9.82)
Range	15–33	24–40	29–47	19–39	-15 to 17	-3 to 29
The control group (KN)	**RO**	**AC**	**AE**	**CE**	**AC-CE**	**AE-RO**
Mean (std. dev.)	30.31 (5.12)	32.62 (4.52)	35.69 (5.06)	21.69 (3.64)	10.92 (6.89)	5.38 (9.41)
Range	16–29	29–47	22–41	18–36	-1 to 20	-3 to 29

5.3 Pearson correlation of learning style dimensions

The learning cycle included two bipolar dimensions—the perceiving dimension, as assessed by the combination item of AC-CE, and the processing dimension, as assessed by the combination item of AE-RO—so they should be unrelated. As shown in Table 3, these items displayed a low level of correlation in the control group (r = 0.08), while they were negatively related in the experimental group (r = -0.13).

It was predicted that the CE and AC items would not be correlated with the AE-RO and that the AE and RO items would not be correlated with the AC-CE items (Smith & Kolb 1996). Table 3 shows that in the experimental group, the CE was associated (r = 0.09) with the AE-RO item, while this correlation was weaker among the control students (r = 0.03). Additionally, AE was negatively correlated (r = -0.02) with AC-CE in the experimental group and positively correlated (r = 0.03) with AC-CE in the control group. Similarly, RO was negatively correlated (r = -0.11) with AC-CE in the control group but positively correlated (r = 0.24) with AC-CE in the experimental group.

In both groups, the dialectic poles of the two combination items (AC and CE, AE, and RO) must be negatively associated. No significant association was found between RO and AC in the experimental group; however, the other combinations in the other group showed a negative correlation. Additionally, the cross-dimensional items (such as CE/RO, AC/AE, CE/AE, and AC/RO) did not show as strong of a correlation with each other as the within-dimension items in the two groups.

Table 3: Pearson correlation of learning style dimensions

	RO/AC	RO/AE	AC/AE	RO/CE	AC/CE	AE/CE	RO/AC-CE	AC/AC-CE	AE/AC-CE	CE/AC-CE	RO/AE-RO	AC/AE-RO	AE/AE-RO	CE/AE-RO	AC-CE/AE-RO
KV	0.02	-0.71**	-0.23	-0.36	-0.50	-0.15	0.24	0.84**	-0.02	-0.89**	-0.91**	-0.14	0.94**	0.09	-0.13
KN	-0.32	-0.71**	-0.07	-0.19	-0.42	-0.14	-0.11	0.88**	0.03	-0.80**	-0.93**	0.14	0.92**	0.03	0.08

5.4 Relationship between feedback methods and performance scores

During phase 1 of the study, the product average was relatively low for both the experimental and control groups, as depicted in Figure 6. Of the 13 students in the experimental group, only one submitted an incomplete product, resulting in an incompletion rate of 7.69%. None of the products were deemed outstanding, while eight were considered average (61.54%), and four were below average (30.78%). Similarly, three of the products submitted by the control group students were incomplete, representing a higher rate of 23.08%. None of the products was classified as outstanding, while seven were average (53.85%) and three were below average (23.08%). These findings were not unexpected, given that the phase 1 output was a sketching exercise assigned after a lecture on the subject of the design problem.

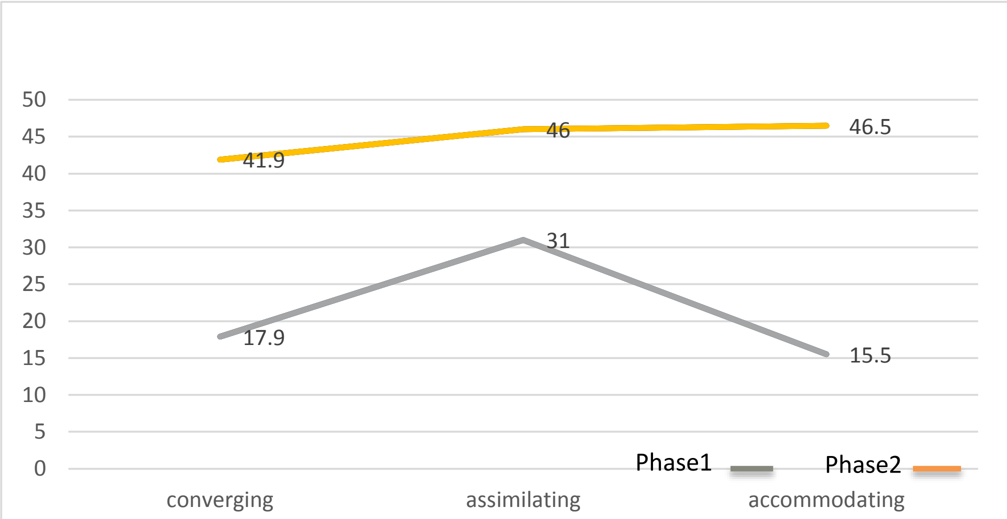

Figure 7: Average grades in the experimental group for four learning styles through Phases 1 and 2

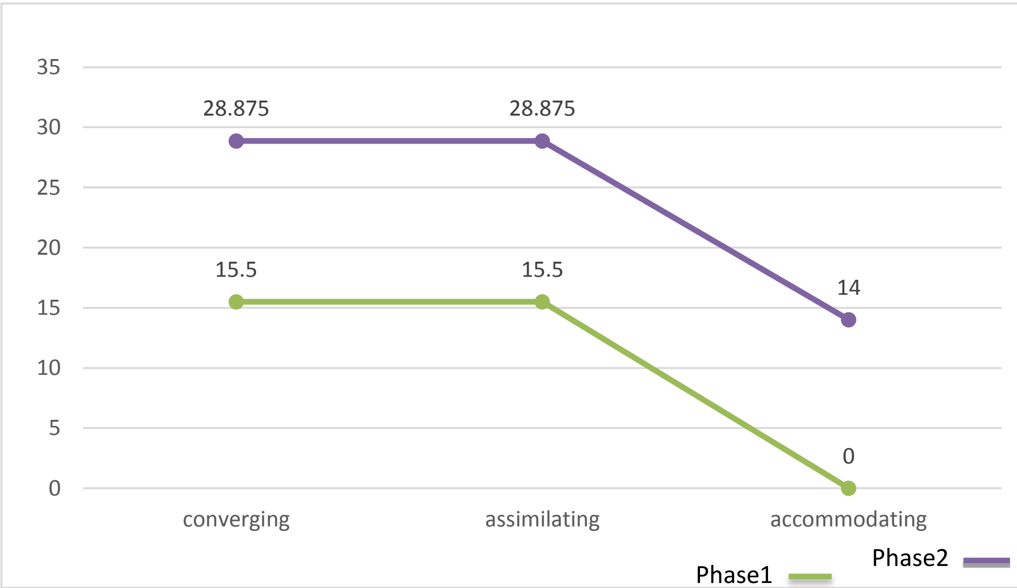

Figure 8: Average grades in the control group for four learning styles through Phases 1 and 2

A paired samples t-test was used to determine whether the feedback techniques affected the performance scores (Table 4, 5) in phase 2 for the two groups. The results of the t-test revealed statistically significant differences in the average performance scores of the two phases for each of the feedback methods in both groups. However, the experimental group's mean difference (24.39) was greater than the mean difference in the control group (16.92), indicating a significant difference in the video feedback technique. The performance scores for phase 2 revealed that the video feedback techniques were the most effective.

Table 4: t-test: Paired two samples for means for the experimental group

	phase 1	*phase 2*
Mean	18.53846154	42.92307692
Variance	75.93589744	37.74358974
Observations	13	13
Pearson correlation	0.260788304	
Hypothesized mean difference	0	
df	12	
t Stat	-9.494110661	
P (T <= t) one-tail	0.00000031285	
t Critical one-tail	1.782287548	
P(T <= t) two-tail	0.00000062569	
t Critical two-tail	2.178812827	

Table 5: t-test: Paired two samples for means for the control group

	phase 1	*phase 2*
Mean	14.76923077	31.69230769
Variance	97.69230769	83.3974359
Observations	13	13
Pearson correlation	0.203182699	
Hypothesized mean difference	0	
Df	12	
t Stat	-5.077524003	
P(T<=t) one-tail	0.000135884	
t Critical one-tail	1.782287548	
P(T<=t) two-tail	0.000271769	
t Critical two-tail	2.178812827	

5.5 Assessment of video feedback factor among the experimental group

This section examined three feedback-related aspects: development, understandability, and encouragement, and the results of every assignment were reported individually. The phase 2 results demonstrate the importance of development ($U = 159$; $p < 0.05$) and understandability ($U = 177$; $p < 0.05$) as feedback elements. However, the difference in encouragement ($U = 146$; $p > 0.05$) was statistically insignificant (Table 6).

These results could provide an opportunity to assess the impact of video feedback aspects from a broader standpoint and provide results specific to each stage. The results demonstrate that video feedback statistically impacted factors like development and understandability ($p < 0.05$).

Table 6: Distribution of Mann Whitney U test results on feedback factors for both groups after Stage 3

Variable	Group	$\bar{X}$	Sd	Mean Rank	U	P
Development	Experimental (SV)	4.50	0.41	14.31	159.00	0.03
	Control (SN)	4.43	0.44	12.62		
Understandability	Experimental	4.33	0.62	13.00	177.00	0.004
	Control	4.40	0.36	12.92		
Encouragement	Experimental	4.49	0.44	15.31	146.00	0.08
	Control	4.66	0.44	7.92		

Understandability is one of the markers of feedback quality (Shute 2008). Consequently, this aspect of the scale was applied in the current study. According to the most recent quantitative studies, video-based feedback more ensures that input is understood far more effectively than face-to-face feedback. Additionally, this outcome is supported by the qualitative findings of the study. A presentation by the teacher was also included in the video feedback, along with written comments expressed both verbally and on the screen. According to other studies, feedback given in video format is more understandable and comprehensible than feedback given in text style (West & Turner 2016).

The extent to which feedback enables the learning task to be developed and revised is another indicator of the quality of the feedback (Sluijmans et al., 2002). Thus, this study utilized the "development" element in the scale, demonstrating that feedback received in video format greatly increases task revision and development compared with face-to-face feedback. The video feedback format is more detailed, makes revision easier and more enjoyable, and motivates students to revise. These components aid in the development and revision of the learning tasks. Similar results have been documented in earlier studies (Denton 2014; Grigoryan 2017). Beyond this, because video feedback is easier and better to interpret than face-to-face feedback, it could have contributed to this outcome. This is due to the requirement that feedback must be understandable to promote development and revision. That is, it becomes challenging to apply feedback to enhance a learning activity if the feedback is not quickly and accurately comprehended. Additionally, one of the benefits of video feedback that has been highlighted in earlier research is that it provides more information than face-to-face feedback (Orlando, 2016). Furthermore, video feedback contains more verbal explanations of written remarks and feedback comments printed on the screen. The instructor's gestures and expressions are also included in video feedback, making this method more thorough, and the students are more able to understand why revisions are necessary (Denton 2014). Thus, the students in this study may have felt that video feedback improved development and revision, due to its detailing characteristics. If detailed feedback is presented, it increases the learning task's effectiveness and usefulness. For instance, this study revealed that students valued detailed feedback and employed it more successfully than face-to-face feedback during the revision procedure (Cevik et al., 2015).

Video technology contributes numerous benefits to educational feedback practices, in addition to ensuring a higher quality feedback perception than face-to-face feedback. First, professors can provide written and verbal feedback to students using a video format, a principle that also applies to face-to-face feedback procedures. However, after receiving teachers' comments during the face-to-face feedback sessions, students might forget these explanations. On the other hand, students do not encounter this issue when participating in video feedback exercises because they always have the option of watching the video again and reviewing the material they missed (Crook et al., 2012).

Second, some students might be hesitant to receive face-to-face feedback comments if they feel anxious or uneasy discussing their work in person (Moore & Filling 2012). Because students can easily watch feedback videos at home and still feel as though they are interacting with their teachers, video feedback may be an effective way to solve any issue of discomfort with in-person feedback.

The results of this study suggest that video feedback may be a more effective means of providing feedback to students compared to traditional face-to-face feedback methods, particularly in terms of the development and understandability of the feedback components. Therefore, incorporating video feedback techniques into teaching methods is recommended to enhance the quality of feedback provided to students for their homework or term projects. The study also found that the use of video feedback promoted interactions between students and teachers and supported students during the development and revision stages, which could enhance student-teacher engagement, a critical factor in the context of architecture learning (Killingback et al., 2019; Yiğit and Seferoglu, 2020). However, it is essential to acknowledge that this study has several limitations, particularly its small sample size. As a result, a larger experimental study could be conducted to validate the findings of this study with a more significant number of participants. Nonetheless, the findings of this study suggest that video feedback can be a promising tool for supporting student learning and engagement in architecture education.

6 Conclusion

In the design experiment, feedback stages were developed to examine the influence of various feedback techniques on student performance. The effectiveness of the video feedback technique on student performance scores was established. As a result, these findings offered a solid foundation for hypothesizing the relationship between the video feedback mode and the interactions between the teacher and students during the design process. All students, regardless of their preferred learning styles, improved their performance scores after the design process. When the different feedback factors were considered independently, development and understandability displayed the most progress, while encouragement showed the least.

The results of the empirical study indicated that new methods could be developed for determining the interactions between the students and instructor during the architectural design course. Architectural education incorporates all phases of the experiential learning cycle since it is viewed as a fusion of technologies, crafts, and other disciplines. Thus, the design studio approach accommodates each of the four learning types. Therefore, teachers must tailor various feedback modes in design education to suit different learning styles rather than concluding that one of the four styles is more appropriate than the others for design education. Learning in the architectural design studio is based on the exchange of innovative ideas and the compatibility of the teaching method with the students' preferred modes of learning. Thus, the key to teaching well is to recognize the variety of students' learning styles and converse with the students in a manner that meets the requirements of every learner.

The current design experiment aimed to investigate the impact of different feedback techniques on student performance by implementing various feedback stages. The results revealed that video feedback was the most effective technique, improving students' performance scores significantly. This finding provided a strong basis for examining the correlation between the video feedback mode and the teacher-student interactions during the design process. Notably, all students, irrespective of their preferred learning styles, exhibited improved performance scores following the design process.

Regarding the individual feedback factors, development and understandability showed the most substantial progress, while encouragement demonstrated the least. These empirical findings suggest that new methods can be developed to determine the interactions between the instructor and students during the architectural design course.

The architectural education system encompasses all phases of the experiential learning cycle, as it involves the integration of technologies, crafts, and other disciplines. Thus, the design studio approach accommodates all four learning types. Accordingly, instead of concluding that one learning style is more suitable than the others for design education, teachers must tailor different feedback modes to suit the diverse learning styles of their students.

Since learning in the architectural design studio is based on the exchange of innovative ideas and the compatibility of the teaching method with the students' preferred modes of learning, teachers should recognize the variety of students' learning styles and communicate with them in a manner that meets the needs of each learner. In summary, the present study highlights the importance of individualized feedback techniques and teaching approaches that align with the diverse learning styles of students in the context of architectural design education.

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