

Integration of Critical Thinking in Interior Design Education: Investigating the Educators' Perception and Challenges

Norhayati Kassim and Zulkarnain Hazim

Interior Design Program, Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, 32610, Seri Iskandar, Perak Darul Ridzuan

Email: zulka606@uitm.edu.my

Coressponding Author Email: hayati84@uitm.edu.my

Nur Maizura Ahmad Noorhani

Interior Architecture Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA

Email: nmaizura@uitm.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v14-i9/22492>

DOI:10.6007/IJARBSS/v14-i9/22492

Published Date: 30 September 2024

Abstract

Critical thinking is a vital skill that higher education students need to equip themselves with to prepare them for the real-world workplace. Recognizing this, critical thinking skills are highlighted as one of the important soft skills by the Ministry of Higher Education in Malaysia in the higher education system. Considering the importance of these skills in education, numerous studies have been conducted on the subject. However, there is still a lack of research specifically focused on feedback from educators on the implementation in integrating critical thinking into interior design education. Therefore, this study aims to explore the perceptions and challenges faced by interior design educators in implementing critical thinking in interior design program. Using a qualitative approach, the study employs semi-structured interviews with interior design educators in selected case studies. 17 participants were involved, and the data collected from these interviews were analyzed using thematic analysis. The results revealed four major themes: the role and attitude of students, the role and attitude of educators, instructional design, and teaching and learning activities.

Keywords: Interior Design Program, Interior Design Education, Critical Thinking, Perception, Challenges, Barriers

Introduction

A survey conducted in the United States found that 92% of 400 companies rated critical thinking skills as the most vital skill required for new recruits in the industry, following

communication skills. Similarly, a survey in Malaysia conducted by Talentcorp (2014) found that critical thinking skills, with a score of 56%, are ranked as the second most important skill for recent graduates from local universities, following communication skills, which scored 81%. As these skills are vital to university graduates, the Ministry of Higher Education (MOHE) has emphasized critical thinking skills as one of the seven soft skills in higher education system. Critical thinking abilities should be incorporated into interior design program just as much as they should be in higher education curricula (Ramis, 2018).

Interior design programs, as a branch of architectural education, involve a problem-solving process that requires students to integrate critical thinking skills to produce high-quality design solutions. This process helps students understand clients' needs, interpret them accurately, and provide tailored design solutions. Therefore, the acquisition of critical thinking skills among interior design students is crucial as it is essential with effective problem solving in the spatial design. By applying critical thinking, problems can be resolved in ways that are agreeable to all parties involved, approaching circumstances with tact and productivity. Interior designer work involves solving spatial problems, enhancing cost efficiency, and improving client satisfaction by optimizing the effectiveness of their services (Piotrowski, 2011). The role of critical thinking in interior design works is to improve our ability to handle circumstances diplomatically and constructively, solving issues in ways that are agreeable to all sides. It promotes listening to every perspective, sharpening our analytical skills, and cultivating workable and agreeable solutions (Deutsch, 2020). The application of critical thinking skills in the industry has significantly enhanced client decision-making by assessing evidence and determining the most suitable design approach (Dunlap, D. R., 2011).

The educator's perception is vital in contributing the development of critical thinking skills among students. However many studies exhibited that most educators are lacking of the understanding the concept of critical thinking in teaching process (Eze, Iwu, & Dubihlela, 2022; Essalih, Ourahay, & Khzami, 2022; Khalid, Bucheerei, & Issah, 2021; Ramis, 2018). According to Yasir, & Alnoori, Mohammed (2020), the students performance in classroom is influenced by the educators evaluation method of critical thinking abilities. He added that due to lack of understanding of critical thinking concept, educators are believed that they are already teach the critical thinking but the fact is, they are only focusing on the subject matter. Contradict to Sèna, & Etienne, (2022), revealed that educators understand the critical thinking concept, but they are normally demotivated to convey it due to their dissatisfaction with the educational system's decline in quality teaching. Likewise Tuzlukova, Al Busaidi, Burns, & Bugon, (2018), stated that educators understand the value of using critical thinking techniques in their instruction, they do not receive enough assistance to put these techniques into practice.

While, observations carried out by Essalih, Ourahay, & Khzami, (2022), indicate that students are given minimal opportunities to take initiative; instead, they are mainly expected to follow a predetermined sequence of steps or actions in a specific order, often without prior reflection or a clear understanding of the process. Additionally, it seems that teachers may not fully grasp the importance of fostering critical thinking in their students. Educators roles in teaching critical thinking is vital in cultivating these skills among students. Thus, their understanding and how it is implemented in the classroom is valuable to be investigated to provide appropriate recommendations to increase the ability of this skill among students.

The objective of this study is to explore the perception of the educators and challenges they are facing in implementing these skills into interior design learning. This study guided by the following research questions:

“What is educators’ perception towards the integration of critical thinking skills into interior design learning?”

“What are challenges hinder the integration of critical thinking in interior design course based on educators perception.?”

Critical Thinking

The definition may vary as given by experts. Some of them define critical thinking as the cognitive or mental process involved in decision making. The term "critical thinking" describes the mental operations, strategies, and models that individuals employ to resolve issues, reach judgements, and pick up new ideas (Sternberg, 1986). Similarly, Huitt, (1998) stated that critical thinking is the deliberate mental process of assessing claims or arguments and rendering decisions that might influence how one develops views and behaves is known as critical thinking. While, Ennis, (1985) defines critical thinking as thoughtful, rational thought that is directed towards choosing what to believe or do. It is rational, goal directed thinking (Facione, 2011; Yaldiz, & Bailey, 2019). The critical thinking process involves the process of identifying, examining, and evaluating arguments to determine their viability. It is an organised mental process that involves evaluating claims and drawing conclusions that serve as a basis for ideas and choices. Improving thought quality through analysis and assessment is the main goal of critical thinking. It also requires the ability to analyse and construct arguments—a talent sometimes referred to as informal logic or critical thinking abilities (Bassham, Irwin, Nardone, & Wallace, 2010; Huitt, 1998; Paul, & Elder, 1992; Kurfiss, ,1988). Critical thinking is a thorough, logical, and goal-oriented process that entails analysing and assessing mental processes to improve belief formation and decision-making (Loh, 2020; Yaldiz, & Bailey, 2019; Ennis, 1985; Facione, 2011).

The APA Delphi consensus (APA, 1990) define elements of critical thinking: interpretation, analysis, evaluation, inference, explanation and self- regulation. Interpretation is the ability to express an article's core ideas in one's own words or summarising it. Analysis is finding ways to make a graph or an illustration to show the problem or highlighting the points of agreement and disagreement between two viewpoints. Evaluation refers to the capacity to assess the reliability of an information source was reliable or to distinguish between two claims that are at odds with one another. Inference is the ability to forecast future events using information at hand. Explanation is the ability to describe an issue to one's own terms to achieve the best possible understanding or the capacity to articulate an argument clearly. Finally self-regulation is the competence to continually assess your opinion to ensure that it is free from bias.

Interior Design Education in Malaysia

Interior design education combines academic knowledge with practical skills, industry exposure, and career preparation to equip students with the tools they need to succeed in the field. The recognition of an interior design program is influenced by its industry relevance,

hands-on experience, and adherence to current design trends. In Malaysia, the interior design program are offered at various levels by various institutions and colleges, including diploma, bachelor's, and master's courses that cover both theoretical and practical aspects of the discipline (PPAID, 2013). These programs are typically offered by architecture schools or faculty departments. The history of interior design education in Malaysia began with the Institute of Teknologi Mara (ITM), now University Teknologi MARA (UiTM), which introduced the first interior design program in 1974. Since then, UiTM has graduated over 2,000 professionals in the field. In 2001, a degree program in interior design was established, producing more than 200 graduates. Following UiTM's lead, four additional universities, both public and private, have since offered interior design degree programs, and more than fifteen institutions now offer certificate and diploma programs. Malaysia's interior design education has evolved since the establishment of the interior design programme at UiTM. The curriculum includes design concepts, drawing, space planning, and technical skills. The curriculum now incorporates sustainability, environmental design, and architecture in a multidisciplinary manner. Postgraduate programs in interior design offer students' opportunities for specialization and research, catering to the evolving demands of globalisation and industry needs.

Interior design degrees in Malaysia are authorised by the MQA, which evaluates the programmes' standards and quality to determine whether they fulfil preset requirements, may be found offered by Malaysian colleges and universities. It is recommended that students check whether the programme they wish to register in has been accredited by the MQA. Interior design education that provides a direct or indirect path to become a licenced professional in the area is covered under the jurisdiction of the relevant Acts. The requirements set out by the Board for the accreditation of architectural programmes comply with relevant provisions of the Malaysian Qualifications Agency Act 2007 (Act 679). While Malaysian Institute of Interior Designer (MIID).

Critical Thinking and Interior Design Learning

The importance and necessity of creative and critical thinking skills for architecture students are well established in the design process and other areas of knowledge in architecture education (Khaled, & Hamza, 2019). Since interior design is a branch of architecture education, these skills are equally essential in interior design education. Both architecture and interior design education aim to cultivate critical design problem solvers by enhancing both cognitive and affective skills. Interior design professionals develop critical thinking skills while navigating the problem-solving process, influencing the entire scope of interior design projects. Interior design demands a diverse range of creative, technical, and critical-thinking skills, making it appealing to students who enjoy various learning modalities (Albadi, & Zollinger, 2021).

The integration of critical thinking skill in space problem-solving offers numerous benefits. The space problem-solving process is essential to enhance decision-making quality and reduce risk (Dubriea, & Punb, 2013). As the role of university is to provide quality graduates to the industry, hence the critical thinking process should be practiced by students before entering the real workplace to prepare them for future challenges. This process aids students towards becoming more adept problem solvers within the design industry (Vaikla-Poldma, 2003). Furthermore, this skill set plays a pivotal role in elevating the abilities of designers

and employers, nurturing effective business management, and satisfying individual needs proficiently (Piotrowski, 2011). The critical thinking skills in vital for architecture students often misuse the internet to reinforce their preconceived ideas, neglecting to explore alternative perspectives and ideas. True critical thinking requires pausing, considering, and applying various tools, which can be challenging in a fast-paced world that values Instagram (Deutsch, 2020).

Like architecture education, interior design deals with the design process in problem solving development. Critical thinking in the design process involves conceptualizing, analyzing, synthesizing, and evaluating ideas to create a final product or service. It involves careful consideration, observation, and scrutiny to ensure its effectiveness (Deutsch, 2020). The design process heavily relies on evaluation techniques and qualities, indicating that creativity is not solely based on imagination, but also on CT methodologies and qualities for meaningful substance and direction (Duncan, 2012). Within the design process, critical knowledge emerges in tandem with critical thinking and a critical approach during phases such as problem-based research, analysis, evaluation, the generation of innovative solutions, and the final product development (Ucar & Kandemir, 2018).

Challenges That Hinder the Critical Thinking Skill Acquisition

A review of previous studies on the barriers that hinders the acquisition of critical thinking skills discovered main factors such as educators' knowledge on the critical thinking concept, the teaching method, student's attitudes and lack of support. Lack of knowledge among educators contribute to the encouragement this skill in classroom (Brečka, et.al ,2022; Eze, et al; Khalid et al., 2021; Ramis, 2018). When educators' knowledge on critical thinking is limited, their preparedness and focus in teaching students to think critically is decreased (Essalih et al 2022; Khalid et al., 2021).

As a result, the teaching method practiced by educators often focus on subject matter rather than developing critical thinking skills Terblanche et al 2020; Özelçi et al., 2019; Amin et al., 2018; Darby & Rashid, 2017; Ismail et al, 2017; Dwee et al., 2016; Ahrari et al., 2016). Furthermore, the educators tend to prefer conventional teaching method instead of innovative teaching strategies that cultivate the critical thinking skills ((Khaled & Hamza, 2019; Darby & Rashid, 2017; Dwee et al.,2016).

In addition to these challenges, students characteristic also pose obstacles to enhancing critical thinking skills. They simply are not interested to think critically (Eze et al) they tend to focus on the subject matter rather than critical thinking (discipline (Aboyan 2021; Ramis, 2018). This may be because they are unfamiliar with the concept of critical thinking (Eze et al., 2022). Additionally, critical thinking is difficult to be practiced if students have insufficient comprehension and lack of interest in reading (Amin, A. M., & Adiansyah, R. ,2018). Reading provides exposure to diverse viewpoints, cultures, and ideas, enabling critical evaluation and analysis of information.

Additionally, lack of support such as time (Akhter et al., 2023), resources (Akhter et al., 2023; Khalid et al., 2021), training (Indar 2016; Snyder & Snyder, 2008) hinders the development of critical thinking skills. When educators neglect critical thinking instruction, it further

impedes the cultivation of these skills in the classroom (Eze et al., 2022; Ramis, 2018; Ahrari, et al., 2016).

Methodology

This study employs a qualitative method using case study approach. According to Yin, Robert (2014), a case study investigates a contemporary phenomenon in its real-world context, particularly when the boundaries between the phenomenon and context are unclear. The study employed a semi-structured interview with interior design educators who are actively teaching Bachelor's in Interior Design program. According to Merriam, & Tisdell, (2015), researchers that specialise in qualitative inquiry seek to comprehend how individuals make sense of their experiences, how they interpret them, and what significance they attach to them. A total of 17 interior design educators volunteered to participate in this study. Examining educators' perceptions and challenges offers a solid foundation for future strategic planning, as educators are a key factor influencing the acquisition of these skills among students.

Participants

The participants for this study were interior design educators who are teaching the Bachelor of Interior Architecture programs.. Their perception and experiences are valuable to access the challenges that they have faced during encouragement of critical thinking skills in interior design learning. There are 17 interior design educators who volunteered to participate in this study. They were selected due to their experience in teaching interior design studios as the aims of this study to examine the challenges facing by them during the interior design learning.

Participant	Age	Experience (Teaching)	Experience (Industry)
IDL 01	Above 50	33	13
IDL 02	Above 50	28	32
IDL 03	Above 50	27	5
IDL 04	Above 50	23	10
IDL 05	Above 50	22	25
IDL 06	Above 50	19	10
IDL 07	40-50	18	3
IDL 08	40-50	17	6
IDL 09	40-50	17	2
IDL 10	40-50	16	8
IDL 11	40-50	16	5
IDL 12	40-50	15	3
IDL 13	30-40	5	10
IDL 14	30-40	8	2
IDL 15	30-40	4	5
IDL 16	30-40	5	4
IDL 17	40-50	15	6

Findings and Discussion

The aim of this study is to examine the perception of interior design educators on the incorporation of critical thinking skills in interior design education. The study is important

because in the classroom, the educators are the the key player in encouraging pupils to think critically (Fadhullah & Ahmad, 2017). The data from semi-structured interview with interior design educators reveals their perception on how the critical thinking skills integrated in interior design education and its challenges. Three themes have emerged from the interview session with interior design educators. They are i) educators conceptualize critical thinking in interior design education, ii) educators’ perception towards the benefit of integrating critical thinking in interior design education and iii) challenges faced by educators in encouraging the critical thinking in interior design classroom.

Theme 1: Educators Conceptualize Critical Thinking in Interior Design Education

The first theme emerged from the interview with Interior design educators, and it revolves around how interior educator conceptualized the critical thinking skills in interior design education. The finding reveals that they perceived critical thinking skills as being developed in interior design education through the process of designing an interior project. This process involves the understanding of briefing, problem solving process, interpretation and considering various factors. Understanding the briefing by client (in the academic given by lecturers) includes the process of understanding of clients’ needs, the subject matter used as well as project requirements. The design phase, also known as design process in interior design scope, plays a vital role. As stated by (Aşkın, 2019) design process involves identifying a problem, generating solutions, and developing the final product:-

Participants	Understanding (user need, matter, requirement)	briefing subject project	Problem solving process	Interpretation	Considering Various Factors
IDL 01	x				x
IDL 02	x				x
IDL 03	x				x
IDL 04	x				
IDL 05	x				
IDL 06				x	
IDL 07	x			x	
IDL 08					
IDL 09			x	x	
IDL 10					
IDL 11	x		x	x	x
IDL 12			x		
IDL 13				x	
IDL 14					x
IDL 15	x				
IDL 16			x		
IDL 17	x			x	
Total	9		4	6	5

Understanding the Briefing

There are about 9 out of 17 participants who emphasized the understanding of briefing encourages students to think critically. In this phase, students need to identify and evaluate user's need, potential subject matter to be used and the project requirement. Educators emphasize the understanding of information is crucial to successfully design as per clients' requests. This is because the interior designer's scope includes finding solutions to space-related issues, improving cost effectiveness, and raising customer happiness through improved service quality (Piotrowski, C. M., 2011). Designers should understand users' preferences, lifestyle, and requirements to enhance empathy and critical thinking. This practice allows them to consider multiple perspectives and consider the impact of different design choices on user experience.

[...] information it gets, and it needs to analyse the data or information it obtains wisely, uh, that's basically what it wants to get from the brief it receives (IDL 07).

[...] Because of this CT, he's gonna respond to the objective. He must establish his objectives. So, from his objective, he's gonna get a problem or a problem he wants to solve (IDL 12).

Furthermore, they also perceived that the understanding of design subject matter is crucial for students to support the appropriate and outstanding concept of the space. This process encourages critical thinking by giving students the tools they need to assess, develop, and analyse their work. This all-encompassing strategy guarantees their ability to produce designs that are socially conscious, practical, and beautiful.

In the field of interior design, understanding the subject matter is crucial. So, if one understands the subject matter, only then will they become critical (IDL 01).'

To do critical thinking, it's about how one can use that subject matter for them, regardless of whether it's in terms of supporting design or supporting the subject. It's crucial to support to produce a good design in interior design (IDL 04).)

Interpretation Process

Moreover, educators highlight that the interpretation of concept and meaning of subject matter are also essential to the critical thinking skills. In interior design education, educator mentioned that the critical thinking can also be developed during the interpretation process. According to Facione (1990), interpretation means the skills to comprehend and express the meaning or significance of a wide variety of experiences, situation, data, events, judgments, conventions, beliefs, rules, procedures, and criteria". In the case of interior design, educators emphasized that students need to interpret of what they understood from the given visual information.. During this process, the ability to interpret the meaning of the visual information will encourage students to think critically through the process of transforming ideas and meaning. Interpretation is a crucial critical thinking element in architectural design, transforming conceptual models into design models and playing a significant role in the design process (Sharif, H. R., Abhar, H., & Goudarzi, F., 2014).

Critical thinking is where... uh... our thinking pattern, which we don't directly perceive and interpret, but we need to... analyze it... we need, uh... to see it in a... okay, in an

overview, in a general sense, but it needs to be supported by detailed evidence... and we need to look at what it... what it has... in relation to the context that we want to, uh, create or be involved in (IDL 07).

So, the explicit one is what is called critical thinking, meaning from the early interpretation (IDL 11).

If the next stage is a concept interpretation. In stage concept interpretation, if we want to inject the critical thinking in that, we look at him having the interpretation itself, either it's literal or he's good at justify by whatever things are included in the design (IDL 13).

Considering Various Factors

Additionally, educators also perceived that various factors should be considered in decision-making is also included the critical thinking process. Thorough analysis of client needs, space constraints, and functionality is crucial for students to accurately identify and define the core problem. During this process, students are encouraged to think creatively by balancing aesthetics, functionality, and sustainability, and to explore and evaluate various design options to find the most effective solution.

But if we're going to make something when we want to design it... he's... to that meaning, he must have a concept, and he also has to understand the context and he needs to understand identity (IDL 01).

It means understanding the needs of people, the preferences of users. This individual should be aware of the diverse and varied interests and desires of people—both in terms of physical and emotional aspects, among others. There are many reasons why, in the context of Interior Design, we can't assume that everyone is the same because people have diverse preferences and interests" (IDL 03).

For the summary of the first theme,, most participants reach the consensus on the best way to integrate critical thinking is through the design process in interior design project implementation. The educators' understanding of the concept of critical thinking is essential in encouraging students to think critically during the design process.. This is important because according to Asefi & Imani (2018), the ability to employ critical thinking skills should be applied by design students at every stage of the design process. Educators believed in the existence of critical thinking during design process benefit to the problem-solving made by students to solve the interior design problem.

Theme 2: Perception towards the Benefits of Critical Thinking Integrated in Interior Design Education

The interview with the participants reveal several benefits of integrating the critical thinking skills interior design education. Educators perceived that critical thinking would benefit students in producing quality in design solution. As stressed by Dubriea & Punb (2013), the space problem-solving process necessitated critical thinking skills to enhance decision-making quality and reduce risk. Table below display seven out of 17 participants who shared their thoughts on the benefits of critical thinking in producing the quality solutions. While six out

of 17 educators believed that critical thinking will contribute to the better characteristic of interior designers.

Participants	Producing Good quality of solution	Good Designer
IDL 01		
IDL 02		x
IDL 03	x	
IDL 04	x	
IDL 05		
IDL 06		
IDL 07	x	
IDL 08	x	x
IDL 09		
IDL 10	x	
IDL 11	x	x
IDL 12		
IDL 13		x
IDL 14		
IDL 15	x	x
IDL 16		x
IDL 17		
Total	7	6

Producing the Quality of Solution

Several educators believed that critical thinking integrated into interior design education would benefit to the quality of output or solution of task project in the classroom. This is aligned with Deutsch (2020), who stated that critical thinking improves our capacity to handle circumstances diplomatically and constructively, solving issues in a way that is agreeable to all sides. It promotes listening to all sides of an issue, sharpening our analytical skills, and cultivating workable and agreeable solutions. Critical thinking involves a comprehensive analysis of a problem, enabling designers to identify underlying issues, constraints, and opportunities, leading to more effective solutions. The application of critical thinking skills in the industry has significantly enhanced client decision-making by assessing evidence and determining the most suitable design approach (Dunlap, 2011). Many educators affirmed that critical thinking integrated in interior design education is essential in producing quality of design solution made. Several excerpt from them are as follows:

So for me, critical thinking is very important, the guidance from critical thinking matters, it will make the work more meticulous, correct, and less prone to errors (IDL 04).

[...] Their design will be straightforward. The dramatic element in their design will be less (IDL 08).

[...]their maturity in design. The outcome will be different (IDL 17).

Producing Good Designer

Furthermore, the practices of critical thinking in interior design education will contribute to the students' performances thus could produce a good designer. The skills to think critically may be able to train them to be a survivor in interior design world. This means that critical thinking are able to guide them to make a logical and practical decision for their interior design project task. This is supported by Dwyer, Hogan & Stewart (2014), who stated that critical thinking abilities are essential for people to adjust to and deal with quickly changing information, which helps them make better decisions and solve problems in practical applications.

To me, when he's got this critical thinking , he has that high sense of survival. Survive in our context that survives in the design (IDL 08).

Without critical thinking, they just follow what others say, meaning they will copy and paste. Whatever has already been done, they do it again.[...]They don't think about what is logical or practical in the direction of the project. When someone says A, they do A and then add B and C (IDL 09).

[...] I think without critical thinking it's hard for him to be a leader and without critical thinking he's difficult to understand (IDL 16).

Consequently, the critical thinking should give focus in interior design education as it deals with space problem solving. This is because critical thinking in interior design education is beneficial to the quality of solution made by students thus increase student performances which in return would produce a good future designer to the industry. This indicates that graduates have a higher chance of exceeding industry expectations and succeeding in their professional endeavours, therefore making a beneficial impact on the industry.

Theme Three: Challenges Faced by Interior Design Educators in Encouraging Critical Thinking in Interior Design Classroom?

The acquisition of critical thinking skills are influenced by various factors. Many elements impact learning, such as the qualities of the learner, the teacher's grasp of critical thinking, and the application of this skill in the subjects being taught (Bezanilla, M. J., Fernández-nogueira, D., Poblete, M., & Galindo-domínguez, H. ,2019). This study revealed that educators' shared their experiences on the challenges that they are facing, may hinder the process of encouraging the critical thinking skills in interior design studio. Most educators indicated that students' poor attitude and characteristic hinder these skills to be developed among students.

Participants	Student attitude (less effort, fragile, passive, less reading, addicted to technology)	Lecturer (alignment among lecturer)	Support (Time, financial) resources,
IDL 01	x		x
IDL 02	x	x	x
IDL 03	x		x
IDL 04	x		
IDL 05	x	x	x
IDL 06	x		x
IDL 07		x	x
IDL 08	x	x	
IDL 09	x		
IDL 10	x	x	
IDL 11	x	x	x
IDL 12	x	x	x
IDL 13	x		
IDL 14			
IDL 15	x		
IDL 16	x		
IDL 17	x		
	15	7	8

Students Attitude and Characteristic

The educators also agree that students often put less effort into thinking critically. Many educators describe the following excerpt to describe their expression on students' less effort:

Students these days can be considered lazy. In the past, we would make models to understand things physically because maybe there were no computers back then. Nowadays, they rely too much on computers to the point where they are reluctant to use their critical thinking skills (IDL 03).

When we ask for A, they will give A. They won't give ABC. So, that is also one of the challenges for lecturers, actually (IDL 10).

Apart from that, educators also highlighted that students' lack of knowledge is due to their limited effort in reading. Students are more likely to prefer using the internet because it offers easy access and quick results. An example of an excerpt from an educator is:

[...]our students don't read much... [...] Because he's looking in the website, he can feel what's close to the website? (IDL 01).

[...] I feel a lack of reading, a lack of reading, the knowledge... They find it difficult to gather data, and then they don't want to explore (IDL 17).

Many of educators also emphasized that students in current generation are more passive, and fragile. They compared the current generation with previous ones in which there are a lot of differences in terms of attitude of students.

The current generation is not like your generation...your generation was okay...when they said they wanted something...they were very proactive [...](IDL 06).

[...]I think because of the new generation that we're dealing with [...]they need to be spoon-fed, everything has to be done for them (IDL 11).

Students back then didn't get enough sleep, and the load of assignments was much more than it is now [...] If we relate it to what we did before, it was much more, yet they already find it hard now (IDL 12).

Poor Alignment among Educators

Interior design studio is normally handled by two or more lecturers in one studio. Thus, alignment between educators also become a challenge to develop these skills. Educators highlighted some difficulties in working together with colleagues hinder these skills to be encouraged. Some of them asserted that:

The problem lies in the attitude of the lecturer. They often blame others (IDL 05).

[...]we need to know our partner too, in terms of understanding the direction, whether it's the same or not[...] (IDL 11).

This matter is crucial because the lecturer is primarily responsible for delivering clear instructions and leading engaging class activities that impact students' thought processes (Rodzalan & Saat, 2015). Supporting teachers in their difficult but vital role of helping students develop critical thinking abilities is important. We also call for more research on the best strategies to help teachers apply their acquired knowledge to other CT tasks, explain students' thinking, and improve their attitudes towards teaching CT (Janssen et al., 2019).

Lack of Support

Educators express their frustration on lack of support in cultivating this skills in interior design education in terms of time constraint, limited resources, limited facilities and financially. They mentioned that limited time as to explain that to teach critical thinking within fourteen weeks period is impossible. They mentioned that:

We're going to have to teach him critical thinking from scratch [...] it takes time... so 3 years isn't enough (IDL 01).

In academia... For me, time is quite limited. Within 14 weeks to achieve something, it's quite limited... in terms of experience (IDL 12)

The lack of enforcement on the professional guidelines in the studio capacity cause the lack of time for the review session of each students.

Another aspect is related to the needs. The institutions have already provided guidelines, such as having 15 students per lecturer, which has been proven effective in

studies. However, if one lecturer is assigned to 30 students, it's double the workload. Just imagine how a lecturer can be critical to teach and assess effectively; they will be completely exhausted. They won't be able to think properly (IDL 02).

Additionally, the goal of universities is to develop critical thinkers, yet there is little funding and effort put into educating teachers. Educator complaint that training and exposure to critical thinking is very limited. Most of them haven't had any critical thinking instruction since work there.

[...] He didn't warm up so much from the school focus near the left brain only (IDL05).

[...] that's the problem. We don't have a subject to teach students to be critical. But we ask them to be critical... that's difficult (IDL 12).

[...] It's not specific to the CT, but it's our own initiative (IDL 13).

Ultimately, insufficient resources which includes monetary and physical funding impede the development of critical thinking. Students in interior design spend a lot of time in their studios. The design studio technique is commonly associated with the fields of architecture and interior design education. Both the implemented and recognised to be associated with the design studio method are referred to by the term "design studio." The physical space and the applied pedagogy are both referred to as the "design studio." (Ahmad Sosa, & Musfy, 2020). The design studio is a problem-solving laboratory that prioritises negotiation, social interaction, and spatial design. It fosters critical thinking and creative problem-solving in ways that are both visually beautiful and practical. However, educators' complaint that the usage of studio is limited.

Additionally, time constraints and limitations in studio usage pose challenges. There's a perception that a significant portion of the mindset operates at the unconscious level, around 60% to 70%, making it crucial to address subconscious barriers. In discussions with seniors, it becomes evident that critical thinking, especially in broadening the scope and managing information effectively, might be a hurdle for some students (IDL 02).

Lack of interest and enthusiasm to do the tasks/design, probably due to the studio culture and environment. (IDL 14)

In interior design education, the capacity to think critically is largely dependent on having enough time, resources, and facilities available. Without these resources, students could find it difficult to fully participate in the critical thinking exercises required for excellent design solutions and career advancement.

Conclusion

This study is aimed to explore the interior design educator's perception and their challenges in teaching critical thinking in interior design education. The integration of critical thinking into interior design education serves various benefit to interior design program, students' performance and industry. However, it is difficult for it to be successful integration if students and lecturers maintain the same attitude towards the critical thinking process. Instructors

believe that several phases of the design process are the main way that critical thinking is to be included into interior design education. They also believe that the critical thinking integrated in interior design education play an important role in improving the decision making and producing a good designer in future. Critical thinking is acknowledged as an essential part of the interior design education process; yet, to properly foster these abilities in students, several resources and attitude-related issues need to be addressed. This is because the attitudes of educators and students have a key role in the development of critical and creative thinking as well as problem-solving skills (Suarniati Hidayah, & Handarini, 2018). The needs to develop critical thinkers is to make better interpreters and understanders of the demands and preferences of their clients. This comprehension results in more precise and fulfilling design suggestions, which raises customer happiness and builds confidence. Furthermore, critical thinking in interior design education promotes the consideration of long-term impacts and sustainability. Designers can evaluate the environmental, social, and economic implications of their choices, leading to more responsible and sustainable design practices.

References

- Aboyan, L. E. (2021). Student Perception of Critical Thinking in an Undergraduate Business Curriculum: The Influence of Gender and Academic Discipline. Temple University.
- Akhter, A., Parveen, M., Hussain, Y., & Khan, A. (2023). Exploring The Challenges Faced By The Teachers In Developing Higher Order Thinking Skills Among Students At Higher Education Level. *Wah Academia (Journal of Social Sciences)*, 2(01), 51-80
- Albadi, N., & Zollinger, S. W. (2021). Dominant learning styles of interior design students in Generation Z. *Journal of Interior Design*, 46(4), 49-65.
- Ahmad, L., Sosa, M., & Musfy, K. (2020). Interior Design Teaching Methodology During the Global COVID-19 Pandemic. 3(2), 163–184. <https://doi.org/10.7454/in.v3i2.100>
- Ahrari, S., Abu Samah, B., Bin Hassan, S. H., Wahat, N. W. A., & Zaremohzzabieh, Z. (2016). Deepening critical thinking skills through civic engagement in Malaysian higher education. *Thinking Skills and Creativity*, 22, 121–128. <https://doi.org/10.1016/j.tsc.2016.09.009>
- Amin, A. M., & Adiansyah, R. (2018). Lecturers' perception on students' critical thinking skills development and problems faced by students in developing their critical thinking skills. *Jurnal Pendidikan Biologi Indonesia*, 4(1), 1. <https://doi.org/10.22219/jpbi.v4i1.5181>
- Asefi, M., & Imani, E. (2018). Effects of active strategic teaching model (Astm) in creative and critical thinking skills of architecture students. *Archnet-IJAR*, 12(2), 209–222. <https://doi.org/10.26687/archnet-ijar.v12i2.1340>
- Aşkın, G. D. (2019). Gamification of design process in interior architecture education: Who? with whom? where? how?. In *SHS Web of Conferences* (Vol. 66, p. 01040). EDP Sciences.
- Bezanilla, M. J., Fernández-Nogueira, D., Poblete, M., & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking skills and creativity*, 33, 100584.
- Brečka, P., Valentová, M., & Lančarič, D. (2022). The implementation of critical thinking development strategies into technology education: The evidence from Slovakia. *Teaching and Teacher Education*, 109, 103555
- Darby, N. M., & Rashid, A. M. (2017). Critical Thinking Disposition: The Effects of Infusion Approach in Engineering Drawing. *Journal of Education and Learning*, 6(3), 305-311.

- Deutsch, R. (2020). *Think Like An Architect: How to develop critical, creative and collaborative problem-solving skills*. Routledge.
- Dubriea, V. R., & Punb, K. F. (2013). Assessing critical thinking skills of project management practitioners: an exploratory study. *The Journal of the Association of Professional Engineers of Trinidad and Tobago*, 41(1), 35-42.
- Duncan, E. (2012). *Design and Critical Thinking : A Process Model to Support Critical, Creative and Empathic Learning in Studio-Based Design Education*.
- Dunlap, D. R. (2011). *Teaching Evidence-Based Design To The Beginning Design Student : Educator Perceptions About Incorporating Research In Beginning Design Education*.
- Dwee, C. Y., Anthony, E. M., Salleh, B. M., Kamarulzaman, R., & Kadir, Z. A. (2016). Creating Thinking Classrooms: Perceptions and Teaching Practices of ESP Practitioners. *Procedia - Social and Behavioral Sciences*, 232(April), 631–639. <https://doi.org/10.1016/j.sbspro.2016.10.087>
- Ennis, R. H. (1985). *A Logical Basis for Measuring Critical Thinking Skills* (pp. 45–48).
- Essalih, S., Ourahay, M., & Khzami, S. E. (2022). Perceptions and practices of science teachers for the development of critical thinking through inquiry: a qualitative study of Moroccan primary schools. *Education 3-13*, 1-16.
- Eze, I. F., Iwu, C. G., & Dubihlela, J. (2022). Students' views regarding the barriers to learning critical thinking. *International Journal of Research in Business and Social Science* (2147-4478), 11(4), 355-364.
- Facione, P. A. (2011). *Critical Thinking : What It Is and Why It Counts*. In *Insight assessment* (Issue ISBN 13: 978-1-891557-07-1.). <https://www.insightassessment.com/CT-Resources/Teaching-For-and-About-Critical-Thinking/Critical-Thinking-What-It-Is-and-Why-It-Counts/Critical-Thinking-What-It-Is-and-Why-It-Counts-PDF>
- Huitt, W. (1998). *Critical Thinking: An Overview*. <http://www.edpsycinteractive.org/topics/cognition/critthnk.html>
- Ibrahim, N. L. N., & Utaberta, N. (2012). Learning in architecture design studio. *Procedia-Social and Behavioral Sciences*, 60, 30-35.
- Indar, D. (2016). *Awakening the awareness: Critical thinking in vocational education* (Doctoral dissertation, University of Sheffield).
- Ismail, F., Ibrahim, N., & Samat, N. (2017). Investigating the Implementation of Higher Order Thinking Skills in Malaysian Classrooms: Insights from L2 Teaching Practices. , 9. <https://doi.org/10.11113/SH.V9N4-2.1361>.
- Janssen, E. M., Mainhard, T., Buisman, R. S., Verkoeijen, P. P., Heijltjes, A. E., van Peppen, L. M., & van Gog, T. (2019). Training higher education teachers' critical thinking and attitudes towards teaching it. *Contemporary Educational Psychology*, 58, 310-322
- Khaled, W., & Hamza, A. A. (2019). *Teaching Strategies And Their Impact To Develop Ct Among Architecture Students.pdf*.
- Kurfiss, J. G. (1988). *Critical Thinking: Theory, Research, Practice, and Possibilities*. (Issue 6).
- Loh, W. L. (2020) *Sharpening Critical Thinking in Problem Identification in Design and Technology Education*.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.
- Özelçi, S. Y., & Çalışkan, G. (2019). What is critical thinking? A longitudinal study with teacher candidates. *International Journal of Evaluation and Research in Education*, 8(3), 495–509. <https://doi.org/10.11591/ijere.v8i3.20254>

- PPAID. (2013). LAM Policy and Procedure for Accrediation of Interior Design Programme (PPAID) (Vol. 01).
- Piotrowski, C. M. (2011). Problem Solving and Critical Thinking for Designer. John Wiley & Sons.
- Paul, R., & Elder, L. (1992). Critical thinking: What, why, and how. *New directions for community colleges*, 77(2), 3-24.
- Putra, P. D. A., Sulaeman, N. F., & Wahyuni, S. (2021). Exploring Students' Critical Thinking Skills Using the Engineering Design Process in a Physics Classroom. *The Asia-Pacific Education Researcher*, 1-9.
- Ramis, A. A. (2018). Instructors' attitudes and perceptions toward critical thinking: A case study of interior design instructors in Saudi Arabia Recommended Citation. Rizco, N. J. (2014). (Translated) Investigation of the Elements of Critical Thinking in the Educational Process in the Jurisdiction of Architecture. 196–221.
- Snyder, L. G., & Snyder, M. J. (2008). Teaching critical thinking and problem solving skills. *The Journal of Research in Business Education*, 50(2), 90.
- Suarniati, N. W., Hidayah, N., & Handarini, M. D. (2018, July). The development of learning tools to improve students' critical thinking skills in vocational high school. In *IOP Conference Series: Earth and Environmental Science* (Vol. 175, No. 1, p. 012095). IOP Publishing.
- Talentcorp. (2014, August 9). MATCHING TALENT TO JOBS-Trends in Graduate Employability. August, 2014. https://www.talentcorp.com.my/clients/TalentCorp_2016_7A6571AE-D9D0-4175-B35D-99EC514F2D24/contentms/img/publication/Matching-Talent-to-Job-1.pdf
- Terblanche, E. A. J., & De Clercq, B. (2020). Factors to consider for effective critical thinking development in auditing students. *South African Journal of Accounting Research*, 34(2), 96-114.
- Ucar, O., & Kandemir, O. (2011). A constructivist studio environment for interior design education. *Design Principles & Practice: An International Journal*, 5(6), 65-79.
- Vaikla-Poldma, T. (2003). an Investigation of Learning and Teaching Processes in an Interior Design class. March.
- Yaldız, N., & Bailey, M. (2019). The effect of critical thinking on making the right decisions in the new venture process. *Procedia Computer Science*, 158, 281-286.
- Yin, R. K. (2014). *Case Study Research; Design and Methods* (5th Edition) SAGE Publication