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Perspectives of Visible Learning for Quality Learning Environment: A case study

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Abstract
A quality learning environment calls for learning to be visible for both lecturers and students. This study aimed to investigate the students' perspectives of the Ten Mindframes and the predictor mindframes of Visible Learning, which significantly contribute to students' academic achievement. Using a mixed-methods research approach, this study involved 416 students in undergraduate programmes. The findings revealed students valued the constructivism construct and the social-emotional aspects of Visible Learning mindframes. The results suggest that a more significant consolidation effort is required to promote a quality learning environment through visible teaching and learning.

Keywords: Visible Learning; ten mindframes; quality learning environment

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1.0 Introduction

The onset of the 21st century marked the emergence of the information and technology era, leading to the dominance of contemporary teaching and learning approaches. The transformation of education has triggered a remarkable surge in the realm of knowledge in education. Hence, effective teaching and learning are crucial to establishing a quality learning environment. A quality learning environment in higher education emphasises clear learning objectives and seeing teaching and learning from the eyes of students and lecturers. Visible Learning embraces and is viewed as the way forward approach closely aligned to Outcome Based Education (OBE).

Visible Learning is a concept developed by John Hattie, which highlights effective teaching strategies that positively impact students' learning in promoting a quality learning environment. Both students and lecturers must clearly understand the learning objectives and strategies that promote a quality learning environment. Visible Learning helps enhance OBE by emphasising students' holistic learning experiences and better equipping them to be competent (Tong & Sidhu, 2022).

The Ten Mindframes of Visible Learning are underpinned by four mindframes constructs: engagement, constructivism, feedback and evaluation, and know thy impact. Thus, it advocates active student engagement and learning motivation, which can consequently enhance students' learning achievement. Visible Learning aligns with the Malaysia Education Blueprint 2015-2025 (Higher Education) initiative of ensuring sustainable excellence in the Malaysian higher education system. The quality of graduates is one of the aspects aspired by the ministry, in which they hope to increase the graduate employability rate from 75% to more than 80% in 2025 (Ministry of

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Education Malaysia, 2015). Visible Learning effectively promotes students' attainment of learning outcomes and develops students to become productive and effective graduates.

In line with the Malaysia Education Blueprint 2015-2025 (Higher Education), the Ministry of Higher Education also initiated the University Transformation Programme (UniTP) to promote financial sustainability and academic productivity in higher education institutions. Therefore, optimising instructional costs in institutions is crucial to redesigning individual delivery levels (Ministry of Higher Education Malaysia, 2016).

Thus, the main objective of this study was to determine students' perspectives of Visible learning and analyse which of the mindframes make a statistically significant contribution to students' academic achievement.

2.0 Literature Review

In sustaining a quality learning environment, focusing on students' needs in the classrooms establishes effective teaching and learning as a dominant aspect of Visible Learning. Furthermore, Visible Learning aims to enhance the teaching and learning process by ensuring student learning is visible. The effectiveness of Visible Learning has been proven in many studies in its positive impact on student learning achievement (Routledge, 2023).

The Ten Mindframes of Visible Learning are Mindframe 1: My lecturer is an evaluator; Mindframe 2: My lecturer is a change agent; Mindframe 3: My lecturer collaborates with me; Mindframe 4: My lecturer sees assessment as feedback to me; Mindframe 5: My lecturer and I engage in dialogue not monologue; Mindframe 6: I enjoy the challenge; Mindframe 7: My lecturer develops positive relationships; Mindframe 8: My lecturer informs me all about the language of learning; Mindframe 9: I receive and act on feedback; and Mindframe 10: I know what successful learning looks like.

These Visible Learning mindframes can be examined through four mindframe constructs: engagement, constructivism, feedback and evaluation, and know thy impact. These four mindframe constructs are aligned with various learning theories, such as Piaget's cognitive constructivism, Vygotsky's social-cultural theory, and Dewey's active learning theory. Students learn best through meaningfully constructing understanding and learning in a quality learning environment. Through daily interactions with lecturers and peers, students are learning to shape their learning behaviour and thinking, which impacts their learning. The discussion below briefly describes the four mindframe constructs within Visible Learning.

2.1 Engagement

Engagement in learning alludes to the meaningful participation of students in learning. Engaged students are motivated in various learning activities and develop a positive interest in learning tasks through positive interactions. Student engagement consists of behavioural, emotional, and cognitive engagement, which are keys to improving student learning achievement (Bond et al., 2020). In the context of Visible Learning, there are two mindframes under the engagement construct: Mindframe 2: My lecturer is a change agent, which covers behavioural engagement; and Mindframe 7: My lecturer develops positive relationships, which covers emotional engagement.

Acquiring Mindframe 2: My lecturer is a change agent, students and lecturers must learn to cope with teaching and learning. Students need to develop positive learning attitudes to take ownership of their learning. Lecturers, on the other hand, should constantly challenge students and transform their teaching pedagogies to meet the different learning needs of students.

Mindframe 7: My lecturer develops positive relationships refers to building positive relationships with students. This mindframe is an essential aspect of effective teaching and learning, which improves students' learning. A supportive learning environment allows students to feel valued and motivated in learning.

2.2 Constructivism

Students need to learn to construct their learning by playing the role of active learners in the classroom. In addition, a study showed that adopting social learning tools to encourage constructivist learning improves students' learning experiences (Cilliers, 2021). In Visible Learning, there are three mindframes under constructivism construct: Mindframe 3: My lecturer collaborates with me; Mindframe 5: My lecturer and I engage in dialogue, not a monologue; and Mindframe 6: I enjoy the challenge. However, studies pointed out that social constructivist pedagogies must be implemented in the classrooms, and lecturers took complete control of the teaching with little interaction with the students (Mapuya, 2021).

Mindframe 3: My lecturer collaborates with me and values collaboration between students and lecturers. Students and lecturers must collaborate in various learning activities and projects to ensure effective teaching and learning. On the other hand, Mindframe 5: My lecturer and I engage in dialogue, not a monologue, encourages interactive learning sessions whereby students and lecturers engage in meaningful discussion and communication. Mindframe 6: I enjoy the challenge, which suggests that the students need to acquire the mindframe of coping with difficulties in learning. Students should see challenges as learning curves for improvement. A study revealed that students needed to be more confident in their learner autonomy and were hesitant in dealing with challenges (Sidhu et al., 2022).

2.3 Feedback and evaluation

Feedback and evaluation act as mirrors for students, enabling them to improve their learning. A study highlighted the importance of providing feedback in higher education courses using various forms of feedback, and 85% of the lecturers admitted that they had changed their teaching styles based on the feedback given by students (Leung et al., 2021). There are three mindframes under the

feedback and evaluation construct: Mindframe 1: My lecturer is an evaluator; Mindframe 4: My lecturer sees assessment as feedback to me; and Mindframe 9: I receive and act on feedback.

Mindframe 1: My lecturer is an evaluator refers to a lecturer who should take an active role in assessing students' learning progress and understanding. Mindframe 4: My lecturer sees assessment as feedback to me, suggests that the lecturers should utilise students' assessment as a form of feedback to improve their teaching. Indeed, for Mindframe 9: I receive and act on feedback, students must constantly self-assess their learning performances to understand their strengths and weaknesses. Similarly, students should receive descriptive feedback from their lecturers to focus on improvement (Byrd & Lansing, 2021).

2.4 Know thy impact

Know thy impact refers to the lecturers' role in evaluating their teaching's impact on students (Hattie, 2012). Effective lecturers will constantly evaluate their teaching and seek improvement to ensure a quality learning environment. There are two mindframes under feedback and evaluation construct: Mindframe 8: My lecturer informs me all about the language of learning and Mindframe 10: I know what successful learning looks like.

Mindframe 8: My lecturer informs me all about the language of learning, implying that lecturers should explain the language of learning to students so that they understand the "what" and "how" of learning. Furthermore, Mindframe 10: I know what successful learning looks like, reflects that students must clearly understand what successful learning is by knowing the learning goals and constant reflection on knowledge.

The preceding discussion highlights the significance of embracing the Ten Mindframes of Visible Learning to promote effective teaching and learning. Students and lecturers must adopt these mindframes to optimise a quality learning environment to achieve the desired goals. Thus, the main objective of this study was to explore the students' perspectives of Visible learning and analyse which of the mindframes make a statistically significant contribution to students' academic achievement. The two research questions guided this study are:

- What are the students' perspectives of the Ten Mindframes of Visible Learning based on the four mindframe constructs?
- Which mindframe according to students' perspectives of the Ten Mindframes of Visible Learning, makes a statistically significant contribution to students' academic achievement?

3.0 Methodology

This study was conducted in one private institution of higher education located in the Klang Valley, Malaysia. This study involved 416 undergraduate students from science and social science programmes.

An explanatory sequential research design with a mixed-methods approach was employed to triangulate the data collected and helped increase the study's validity and reliability (Creswell & Creswell, 2022). The data were collected via a questionnaire involving the undergraduate year-two students whilst interviews were conducted to gauge their viewpoints on Visible Learning.

Stratified random sampling was used to select the sample for this study. In this study, 213 science students (51%) and 203 (49%) non-science students participated. For interviews, a total of 21 students were involved, in which 13 students volunteered in the focus group interviews, and eight volunteered in the individual interviews.

The research instruments used in this study were adapted from the Mindframes Survey by Visible Learning Plus (Alaska Staff Development Network, n.d.). The questionnaires and interview protocols were validated by a panel of experts consisting of three qualified and experienced researchers. The feedback on the questionnaires was considered for enhancement before finalising the instruments. The Cronbach's alpha reliability for the student questionnaire was 0.983. The Cronbach's alpha value score between 0.8 and 1.0 indicated high reliability (Hair et al., 2020). Peer debriefing and intercoder were utilised to review the interview codes to increase the reliability and credibility of the interviews. An agreement above 0,80 is considered a strong agreement; hence in this study, it is considered as a moderate agreement with Cohen's kappa of 0.77 was recorded in the degree of agreement between two peer debriefers.

The data cleaning process conducted in this study included checking on blank responses and missing values, data entry errors, outliers, and conducting normality tests. Data cleaning ensures having clean data for higher quality data to be included in this study, which increases the validity and reliability of the study (Creswell & Creswell, 2022).

For research question one, descriptive statistics of mean and standard deviation were used to analyse the quantitative data, whereas thematic analysis was used to analyse the interview data. Multiple regression was adopted to answer research question two using SmartPLS software version 3.3.3. The effect sizes were analysed to determine the best student predictor mindframe of Visible Learning, significantly contributing to students' academic achievement.

Ethical considerations were established in this study through standard procedures, obtaining permissions from the institution's authorities and pseudonymity.

4.0 Findings

The following section provides the main findings based on the two research questions that guided this study.

4.1 Research Question: What are the students' perspectives of the Ten Mindframes of Visible Learning based on the four mindframe constructs?

The students' overall perspectives of the Visible Learning mindframe construct were examined and presented in Table 1. The findings revealed that the constructivism construct (M=3.104, SD=.380) recorded the highest mean score, indicating respondents' moderate agreement. In this study, a score of 3.50 and above was considered a favourable agreement with the item, while 3.00 to 3.49 indicated moderate agreement. On the other hand, a score of below 3.00 indicated a disagreement with the item/statement posed.

Table 1. Students' perspectives of Visible Learning mindframe constructs (n=416)

Constructs	Mean	SD
Engagement	3.098	0.427
Constructivism	3.104	0.380
Feedback and evaluation	3.041	0.390
Know thy impact	3.077	0.360

Scale: 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree

The students' perspectives of the Ten Mindframes of Visible Learning were also explored, and the findings are presented in Table 2. The findings revealed that Mindframe 7: My lecturer develops positive relationships (M=3.143, SD=0.608) recorded the highest level of agreement, whereas Mindframe 4: My lecturer sees assessment as feedback to me (M=3.009, SD=0.606) recorded the lowest perceived mindframe among the respondents.

Table 2. Students' perspectives of the ten mindframes of Visible Learning (n=416)

Ten mindframes of Visible Learning	Mean	SD
Mindframe 1: My lecturer is an evaluator.	3.086	0.552
Mindframe 2: My lecturer is a change agent.	3.067	0.628
Mindframe 3: My lecturer collaborates with me.	3.124	0.578
Mindframe 4: My lecturer sees assessment as feedback to me.	3.009	0.606
Mindframe 5: My lecturer and I engage in dialogue, not monologue.	3.084	0.614
Mindframe 6: I enjoy the challenge.	3.087	0.580
Mindframe 7: My lecturer develops positive relationships.	3.143	0.608
Mindframe 8: My lecturer informs me all about the language of learning.	3.059	0.574
Mindframe 9: I receive and act on feedback.	3.054	0.643
Mindframe 10: I know what successful learning looks like.	3.108	0.569

Scale: 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree

Students also expressed a similar response via the qualitative data from the interviews. The theme found under Mindframe 7 is establishing a sense of belonging, which further corroborates the quantitative findings. The students (FGI2_S2, FGI3_S3, INT5) emphasized the sense of belonging in learning, which covers the positive relationship with lecturers and peers. They perceived positively in terms of the relationship with their lecturers, in which they felt positive relationships lead to a positive learning environment. The students highlighted that their relationships with lecturers were like friendships. The supporting excerpts are as follows:

"*So we laugh about things, and when I am stressed, she will also comfort me and give me encouragement. So, we are like friends*." (FGI2_S2_241120)

"There is one lecturer who is very, very, very close to us. It is like a very good friendship going on between lecturers and students. That is how we learn." (FGI3_S3_201020)

"*He (the lecturer) is not like a lecturer. He is like a friend also...He always talks to us and discusses the cooking style and also about his personal life."* (INT5_221020)

Based on the findings from students' perspectives of Visible Learning mindframes, students believed that constructive learning impacts their learning achievement. Regarding the Ten Mindframes, they valued the socio-emotional aspect of learning, which is reflected in Mindframe 7: My lecturer develops positive relationships.

4.2 Research Question: Which mindframe according to students' perspectives of the Ten Mindframes of Visible Learning makes a statistically significant contribution to students' academic achievement?

The students' perspectives on the Ten Mindframes of Visible Learning were analysed. Based on the students ' perspectives, the structural model was used to analyse the best predictor mindframe of Visible Learning, which makes a statistically significant contribution to students' academic achievement.

The path coefficient and effect sizes for the structural model using a 5,000-sample re-sample bootstrapping procedure were reported. The R^2 was 0.047 (Figure 1), which signified that the Ten Mindframes can explain 4.7% of the variance in students' academic achievement.

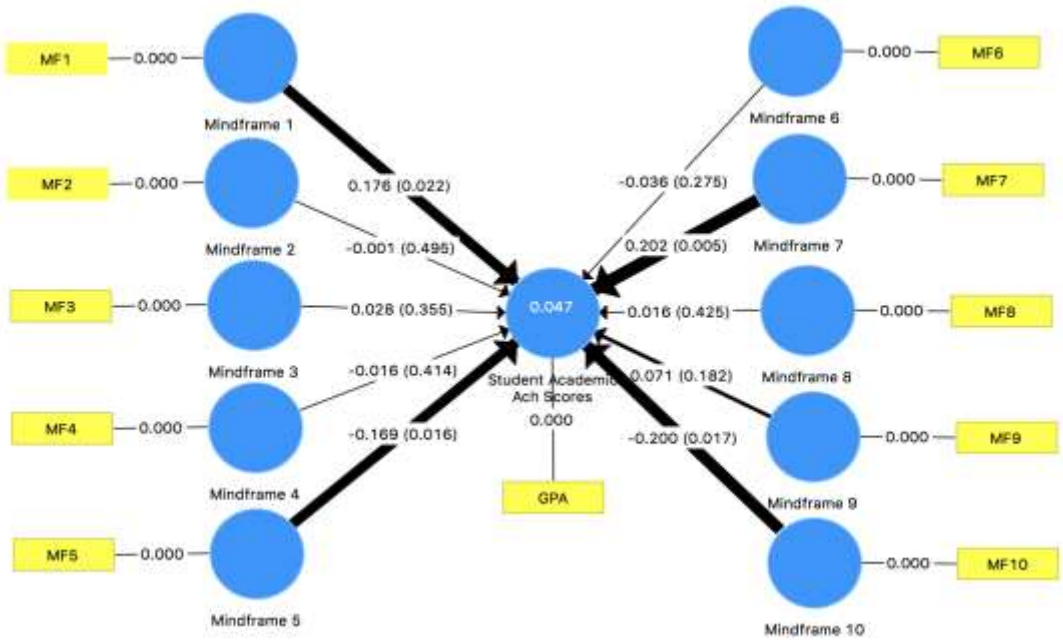

Fig. 1: Path coefficient of the structural model for the ten mindframes (students' perspectives)

The regression analysis on the Ten Mindframes was conducted. The effect size was reported as the decision on the relationship between the predictor mindframes and students' academic achievement, as presented in Table 3. Mindframe 7: My lecturer develops positive relationship, has a small effect size (f^2=0.020), which concluded as the predictor mindframe in this study. According to Cohen's (1988) guideline on effect size, f^2 between 0.20 to 0.14 represents small effect. Hence, the findings showed that all the mindframes do not have effect on students' academic achievement, except for Mindframe 7.

Table 3. The summary of regression analysis on the ten mindframes of Visible Learning (students' perspectives)

Relationship	f^2	Effect size	Predictor mindframe
Mindframe 1: My lecturer is an evaluator. → Student Academic Achievement	.013	No effect	No
Mindframe 2: My lecturer is a change agent. → Student Academic Achievement	.000	No effect	No
Mindframe 3: My lecturer collaborates with me. → Student Academic Achievement	.000	No effect	No
Mindframe 4: My lecturer sees assessment as feedback to me. → Student Academic Achievement	.000	No effect	No
Mindframe 5: My lecturer and I engage in dialogue not monologue.→ Student Academic Achievement	.010	No effect	No
Mindframe 6: I enjoy the challenge. → Student Academic Achievement	.001	No effect	No
Mindframe 7: My lecturer develops positive relationships. → Student Academic Achievement	.020	Small effect	Yes
Mindframe 8: My lecturer informs me all about the language of learning. → Student Academic Achievement	.000	No effect	No
Mindframe 9: I receive and act on feedback. → Student Academic Achievement	.002	No effect	No
Mindframe 10: I know what successful learning looks like. → Student Academic Achievement	.013	No effect	No

To summarise the main finding based on students' perspectives, Mindframe 7: My lecturer develops positive relationship makes a statistically significant contribution to students' academic achievement.

5.0 Discussion

5.1 The Constructivism Construct

In this study, the constructivism construct of the Ten Mindframes of Visible Learning recorded the highest level of agreement towards effective learning, which suggests that students learn to construct their learning through accommodation and assimilation, as proposed

by Piaget, during active interaction with lecturers or peers and the learning environment (Hargraves, 2021). When students engage in constructive learning, they see learning from different perspectives and relate knowledge to the demonstration or learning tasks involved. Hands-on learning allows students to assimilate knowledge, skills, and learning attitudes into their existing cognition, which stimulates positive learning (Valamis, 2022). Other than relating new information to their existing knowledge, the students learn to interpret new knowledge and concepts, which results in learning gains.

5.2 Mindframe 7: My Lecturer Develops Positive Relationships

In sustaining a quality learning environment, positive relationships significantly impact student learning. Based on the findings of this study, students perceived positively with this mindframe. Students experience a sense of belonging and feel accepted and supported in a positive relationship environment. Positive relationships foster students' motivation to learn (Filgona et al., 2020). Students feel more motivated and engaged in the classroom and connected to their lecturers and peers when they have positive emotional well-being. Students' motivation has been found to influence their ability to complete their studies (Sidhu et al., 2023). They are more willing to participate and contribute during the learning process, which leads to better learning experiences, thus contributing to better students' academic achievement (Buari & Alim, 2020).

Positive relationships in a quality learning environment must be fostered through positive interactions with the learning contents, lecturers, and peers during the learning process. From the findings, students perceived positively that Mindframe 7: My lecturer develops positive relationships and has the most significant impact on their learning. Positive relationships with the lecturers are crucial for students as they prefer approachable and responsive lecturers supporting their learning and emotional needs.

Clear and open communication with students is essential for effective communication in a quality learning environment. Hence lecturers should often listen to students' ideas and encourage them to express their thoughts and engage in meaningful discussions. Students feel they learn better when they have trusting relationships with the lecturers, as the positive learning atmosphere impacts their learning. On the other hand, the qualitative findings also revealed fostering a sense of belonging based on students' voices, which was aligned with the quantitative findings on students' perspectives. Students believed that if the lecturers were kind and caring towards them in developing good relationships, they would be more willing to put effort into learning. The positive relationships with their lecturers act as a yardstick to transform students' limiting beliefs into empowering beliefs, promoting behavioural interdependence between students and lecturers (Hattie, 2012).

The findings of this study based on students' perspectives are crucial as there is a lack of comprehensive studies on student-lecturer relationships and their influence on students' learning experiences in higher education contexts (Tan et al., 2016). The findings of this study were a critical contribution to emphasise on the importance of positive relationships between students and lecturers in influencing students' learning.

6.0 Conclusion and Recommendations

Visible Learning is a contemporary approach widely emphasised in many countries. However, there is scant empirical evidence of studies on Visible Learning in the Malaysian context, which is one of the limitations of this study. This study is one of few studies on Visible Learning in Malaysia. For future studies, it is recommended that more studies explore the Ten Mindframes of Visible Learning in different institutions of higher learning in the Malaysian context. Besides that, future studies could examine Visible Learning at different educational levels, such as preschools, primary and secondary schools, and higher education settings. Another limitation of this study is that it involved only one private university in terms of sample size. Hence future studies should examine a larger sample population and include other methodologies, such as classroom observations, to obtain a better insight into the implementation of Visible Learning in the classroom.

Nonetheless, this study has shed light on an important aspect of the teaching and learning process, such as viewing learning from the eyes of the students. More importantly, embracing the main finding via Mindframe 7 (I develop positive relationships) is the best student predictor mindframe to help educators enhance students' academic achievement. Therefore, it is recommended that more effort should be put into developing emotional attachment with students. Establishing positive relationships with students supports students' well-being, thus performing better academically. Institutions of higher learning should organise more student-lecturer activities or events to provide more opportunities for students and lecturers to interact.

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Paper Contribution to Related Field of Study

This paper has both theoretical and practical contributions to teaching and learning in the context of knowledge enhancement of Visible Learning in the higher education context in Malaysia.

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