Mirror, Mirror on My Blog

Vinod J. Nair[1], Jinchi Yip[2]
{vinod.nair@taylors.edu.my[1], jinchi.yip@taylors.edu.my[2]}

Taylor's University, Selangor, Malaysia.

Abstract. Reflective practice is an exercise prescribed by educators to develop metacognition. A powerful tool, it gains insight into students' state of mind; their struggles, fears and inspirations, while also revealing strengths and weaknesses in curriculum and pedagogy. In a class of 52 students of an undergraduate design programme at a private university in Malaysia, weekly, and final reflections are required in students' individual academic journals that serve as their e-portfolios. This qualitative research seeks to understand students' learning journey and to reflect on teaching practice by using the rich data from students' reflections. General themes related to teaching and learning via student reflections were discovered. Students have expressed a sense of realisation, motivation, development and transformation in themselves throughout their learning experience in a 14-week semester. This paper also discusses the importance of reflective practice via e-portfolios to inform curriculum planning and pedagogic practice.

Keywords: Reflective Practice, Teaching and Learning, Design e-Portfolio, Metacognition.

1 Introduction

Reflective practice To reflect, at its simplest means to think carefully about something. Reflection as a practice in teaching and learning, has deeper intentions, "reflective practice is the ability to reflect on an action so as to engage in a process of continuous learning." [1] Reflections are sometimes accompanied with visual elements in the form of sketches, doodles or photographs. In design schools these kinds of reflections have been a long standing practice, especially in the use of design journals.

With the advent of internet technology and the ubiquitous use of mobile phone technology, the process of reflective practice that was traditionally done in design journals has shifted to a digital paradigm. Where previously student designers carried small notebooks to record their thoughts and ideas, today they use digital sketch applications like Procreate, Adobe Fresco and Paper 53. Social media applications like Facebook, Instagram, Twitter or blogs like Tumblr, WordPress etc. are used in combination to record their thoughts and journeys. In a more formalised educational setting, the use of blogs as e-portfolios has seen increased importance in higher education [2] [3] [4]. This modality was more crucial during the shift to online learning duringthe Covid-19 pandemic and country-wide lockdowns [5].

DESIGN-DECODED 2021, August 24-25, Kedah, Malaysia

DOI 10.4108/eai.24-8-2021.2315266

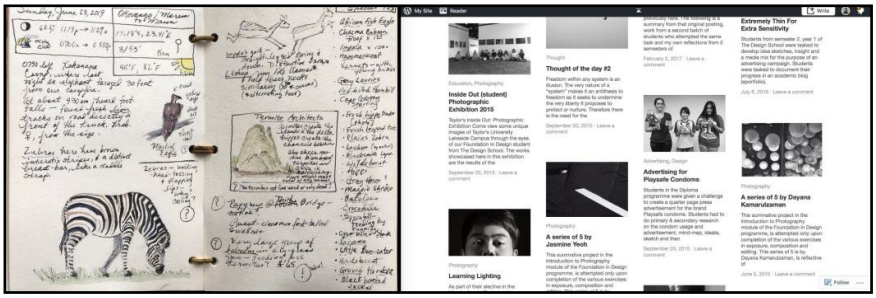


Figure 1 (Left) Journaling done in a sketchbook, (right) journaling done online using WordPress.

E-portfolio as Reflective Practice At The Design School's Bachelor of Design (Hons) in Creative Media (BDCM) programme at Taylor's University, Malaysia, e-portfolios have been mandated in the programme since its inception in 2018. A written reflection is one component of reflective practice that is an e-portfolio. The e-portfolios are designed to record a students' progress from start to finish — their decisions, epiphanies and failures — throughout the 14-week semester in their respective modules, where problem-based learning activities are a major part of the curriculum design. The e-portfolio is an online digital document that is inherently reflective in practice (see Figure 2). "We improved our ability to use technology in many interesting ways. We discovered how a virtual wall could be turned into amazing e-portfolios, and how the various Google apps could galvanize impressive student collaborations." [5]

The reflective practice assessment component prescribed to students inadvertently forces educators to reflect on their own conduct, decisions, curriculum design and pedagogical approach. In doing so, educators analyse what was taught, how it was taught and how it might be improved or changed to not only improve the acquisition of learning outcomes but also to improve students' experience of learning [1]. "An increasingly common platform for these engaged learning experiences is the ePortfolio, which entails students creating and compiling artifacts that represent their learning, accompanied by reflections about what and how they learned." [2]

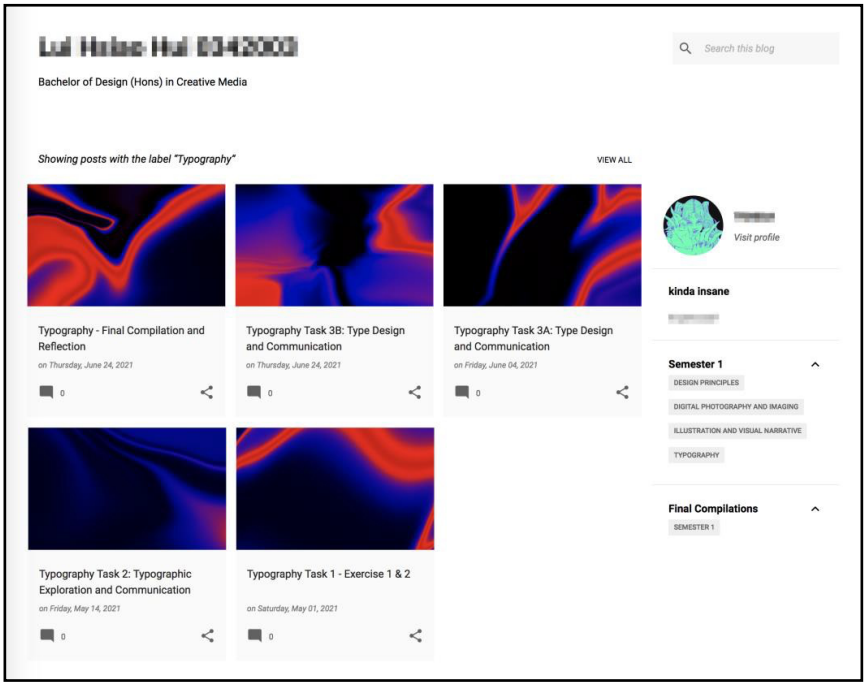


Figure 2 The above showcases a student e-portfolio. E-portfolios have been mandated in the programme since its inception in 2018. Each task has a dedicated post which documents the students academic progression and reflection.

Lifelong Learning & Metacognition Reflective practice in teaching and learning cultivates good learning habits in oneself and between peers—it fosters and cultivates lifelong learning skills. From a social learning perspective, the experience of learning is transformed from a private journey to one that now involves peers, constituting a community of practice. The reflective practice of maintaining e-portfolios allows peers to gain insight and knowledge from one another—making it a shared experience [4]. Reflective practice allows individual students to review their documented processes in the e-portfolio and make judgments about their own work, facilitating the nurturing of their own identities and the development of metacognition. Metacognition simply put is thinking about thinking. Metacognition is the development of self-awareness and understanding of one's own thoughts (and actions), which is crucial for the development of an autonomous learner and lifelong learning [6].

Reflective Practice Organisation At The Design School, reflective practice vis-à-vis the e-portfolio is generally divided into: what was taught, what was instructed/said, what was done and what was thought/experienced. However, this may vary between modules depending on the module's needs. Lectures constitute what was taught, assignment briefs and feedback constitute what was instructed and said, the processes constitute what was done and the written reflections constitute the articulation of what was thought and learned throughout the process of learning. Students in the first semester of the first year in the BDCM programme generally populate their eportfolios with: lectures, instructions, feedback, reflections and further reading (see Figure 3).

1. *Lectures*: design students document their key take-away points from

every lecture and or demonstration given. Documenting these points helps them commit them to memory since they are reminded of them every time they update their eportfolios. To a reader/evaluator/moderator, it showcases the knowledge they gained in each lecture.

2. *Instructions***:** documenting the instruction allows for an understanding of the challenge put forward and gives context to the work produced subsequently as a response to theinstructions.
3. *Feedback*: documents the feedback allows the reader/evaluator/moderator to understand the reasons behind some of the decisions made, but it also serves to remind the design student of the feedback he/she received that is often forgotten. By documenting the feedback in the eportfolio, as soon as it is given, the design student not only retains more but also is reminded of the advice or guidance given which has some influence on the final outcome.
4. *Reflection*: the reflective writing component in the reflective practice that is the e- portfolio, allows the student time for introspection and helps develop autonomy whereby a learner is able to take control of his/her learning. lt also allows for the development of metacognitive skills since it increases objectivity and critical thinking. Reflections are divided into 3 areas: *experience, observations* and *findings*. According to Miettinen (2000) [7], for learners to be effective, four abilities are required - concrete experience abilities, reflective observation abilities, abstract conceptualising abilities and active experimentation. Therefore, the requirements for writing reflection in the students' blog was guided by this.
    - ***Experience*** refers to the activities the learner participated in, their feelings, views or comments of their experience during class or during the exercise orproject. [15]
    - ***Observations*** refer to internal and external examination of what transpired during the experiences of the various activities. Learners are expected to notice or identify strengths and weaknesses in themselves but also in the conduct/approach of other learners. Learners are expected to make observations also about the activity and the results of their activity and make comparisons with the results of others. However, the observations should not include reasoning–that should be saved for the findings. [7]
    - ***Findings*** refers to the learner's conclusion of the session/project/semester; what was learned on the topic; what they learned about themselves/others and about the learning process. Learners are encouraged to state what needs to be done and how, in order to strengthen their weaker areas; what they have gained and how they could put it to use; on how the activity could have been designed or planned better and how and where the facilitators could improve on their performance. [7] [16]
5. *Further reading*: students are encouraged to read and source knowledge in the discipline and or topic to improve their grasp in the area of study.

This has a direct effect on their work process. It is often the case when design students come into new knowledge that learning has an influence on the richness of the process and final output. Sourcing knowledge on their own empowers them by freeing them from dependence on their facilitators. “The designer constructs the design world within which he/she sets the dimensions of his/her problem space, and invents the moves by which he/she attempts to find solutions.” [16]

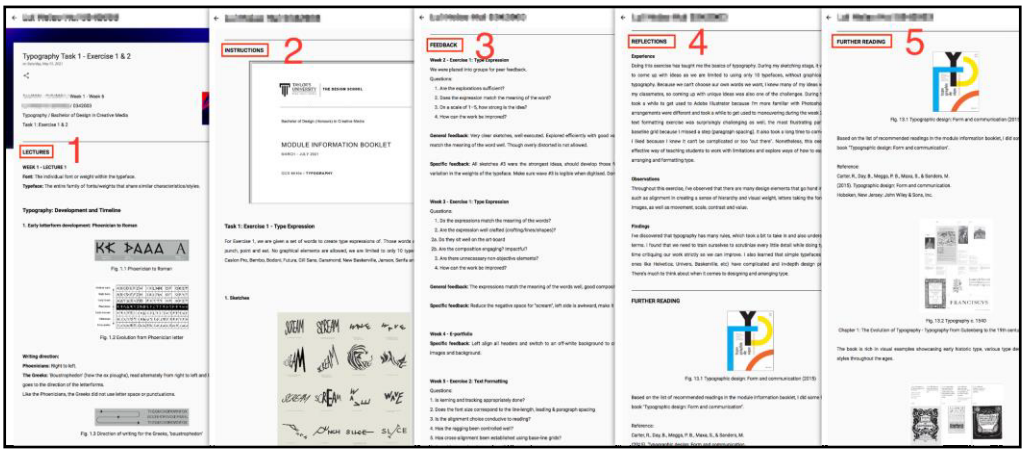


Figure 3 The 5 sections that populate an e-portfolio post: lecture, instructions, feedback, reflections and further reading.

In studying the students’ reflections, educators will have a better grasp of their learning and more importantly, their thoughts processes. The rich data of students’ reflection in these e-portfolios would in turn provide a platform for educators to reflect upon their teaching practice. According to Fook (2002) [8], “...critical reflection involves thinking about one’s practice and critically deconstructing how we have developed these skills and responses with a view to developing new theories of practice for the future.” Perhaps that would lead to designing more appropriate or relevant pedagogical approaches to improve teaching and learning. Hence the research objectives are:

1. To understand students’ learning journey through their reflections
2. To reflect on teaching practice by using the rich data from students’ reflections.

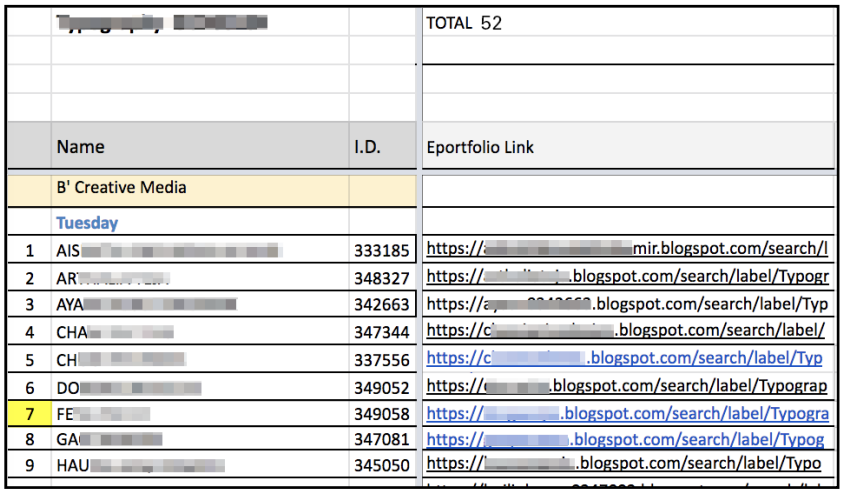
With the objectives above, the researchers set out to find answers to the following questions:

1. What are the major points highlighted in the students’ reflections?
2. How do the reflections in the e-portfolio inform us about teaching and learning?

2 Method

The two researchers involved in this study are module leaders and facilitators of modules in the first semester of the BDCM programme. Both researchers have been teaching first semester students since the programme's inception in 2018 and have a combined experience of above twenty years in teaching and learning.

The e-portfolio is an academic journal which documents the learning journey of a student in a systematic and methodical manner, which allows the students as well as the facilitator to reflect on their own individual practices. The e-portfolio contains 5 sections, and these are: summary of lectures, task instructions, feedback, reflections and further readings (See Figure 3). Each task prescribed in the module has a dedicated e-portfolio post. Towards the end of the module, a final compilation post curates all the final pieces of work, accompanied by a final reflection of the entire learning journey (See Figure 5). In order to ensure coherency in the reflection, the students are guided to reflect on 3 areas, namely “experience”, “observations” and “findings” (See Figure 6).



			TOTAL 52
	Name	I.D.	Eportfolio Link
	B' Creative Media		
	Tuesday		
1	AIS	333185	https://…mir.blogspot.com/search/l
2	AR	348327	https://…blogspot.com/search/label/Typogr
3	AYA	342663	https://…blogspot.com/search/label/Typ
4	CHA	347344	https://…blogspot.com/search/label/
5	CH	337556	https://…blogspot.com/search/label/Typ
6	DO	349052	https://…blogspot.com/search/label/Typograp
7	FE	349058	https://…blogspot.com/search/label/Typogra
8	GA	347081	https://…blogspot.com/search/label/Typog
9	HAU	345050	https://…blogspot.com/search/label/Typo

Figure 4 E-portfolio links were recorded for assessment purposes. This would provide easy access to thenecessary data in the form of the qualitative final reflections.

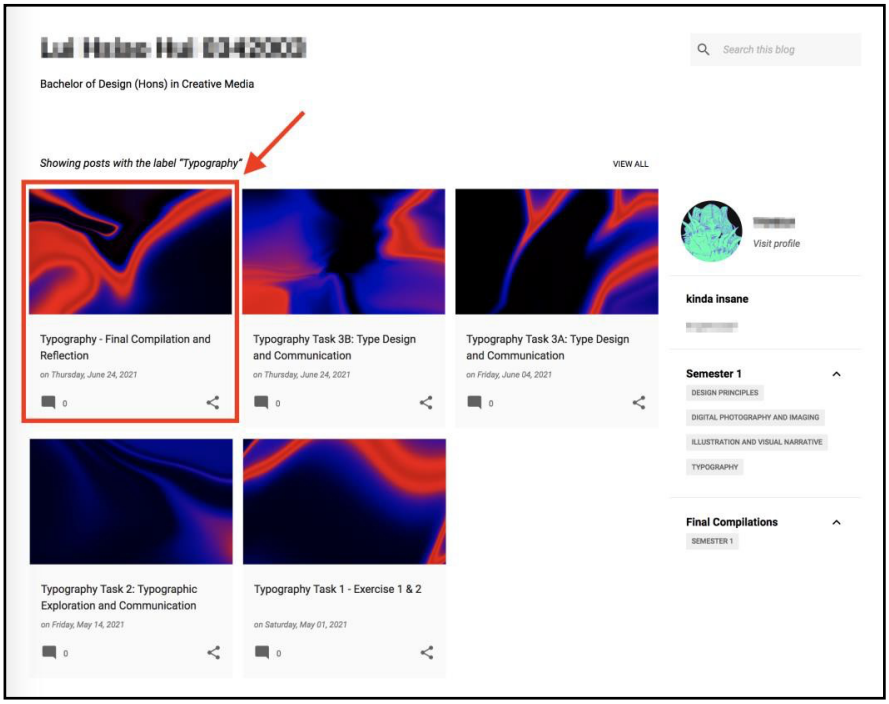


Figure 5 The Final Compilation and Reflection post is highlighted in red from which the final reflectionsare extracted.

Figure 6 The Reflection is focused on students' experience, observations and findings from their 14-weekexperience of the module.

These 3 areas of “experience”, “observations” and “findings” were identified to inform the facilitator of the effects of their curriculum design on students but also as reflective practice. In addition to informing the facilitator, the reflective writing component, allows the student time for introspection and helps develop autonomy whereby the student eventually takes control of his/her learning. lt also allows for the development of metacognitive skills since it increases objectivity and critical thinking.

With the objectives and questions identified, the researchers set out to collect the data from the final reflections in 52 students’ e-portfolios. This constituted the primary and only source of data for this research. The students were in the same semester and their e-portfolio links were submitted in Google Sheets (see Figure 4). In practice, each student's e-portfolio link is recordedand stored for assessment purposes.

The study lent itself to a constructivist-interpretive paradigm (worldview) that is relativist in ontology where the lived realities are relative to the phenomena and the individual—propagating the idea of many minds and many truths [6]. The study intended to understand the empirical experiences of participants — students in the first semester — by interpreting their experiences found in the reflective writing in their e-portfolios. Thus the epistemology, underpinning the study, is subjectivist in nature informing the research design of this qualitative inquiry.

These final reflections were selected to be studied because it provided a conclusive view of the students’ learning experience. From the 52 reflections studied, 38 were deemed useful while 14 were eliminated (see Table 1). The ones eliminated were discarded due to incoherency or deemed irrelevant to the research. The document was shared between both researchers to corroborate each other's interpretations or conclusions.

Table 1. Frequency of themes and number of participants.

Theme	Frequency (No. of times itwas referenced)	Participants (No. ofparticipants referenced it)
Realisation	26	22
Motivation	13	12
Development	7	7
Transformation	17	17

External examiners as well as internal moderators have been referred to the e-portfolios at the end of every semester since the inception of this practice in 2018. In the words of one of the external moderators, "*The students submit digital work online [e-portfolio] for group discussion and this provides the opportunity for group comment and for students to learn and share ideas with each other.*" The e-portfolio not only benefits the students' learning but also provides valuable data for module facilitators to improve their pedagogy and delivery of their modules. This adds to the validity of this method of data collection. As students are only given a general guideline of categories of "experiences", "observations" and "findings" to write as reflection, they are free to express themselves within those categories with no inhibition. In that regard, the data is deemed to be reliable because of the consistency in the guideline's categories.

The reflections are compiled in a matrix for the purpose of analysis and categorization in order to identify themes (see Figure 7). Student reflections were read several times and analysed. The process was recursive and iterative in nature. The matrix that was created to house the different statements extracted from the reflections upon analysis were categorised. From these broad categories general themes were identified. Multiple data points have provided multiple measures of the same phenomenon [9] and thus corroborate the themes that were the result of the analysis(see Figure 8).

		Year 1, Semester 1.		
	Name	**Reflection**	**Emerging Categories**	**Link**
1	[redacted]	**Observation:** This class really helped me to understand the importance of Typography in design. I never knew that type expression, formatting, layout, etc played important roles to create a meaningful design. I always wondered like "How did people make fonts? how do they design it?" but I eventually make my own font! what a great experience. I never thought that I'm able to make my own font.	Realisation, Joy Motivation	https://we[redacted].blogspot.com/2020/11/[redacted]hy-final-compilation-reflection.html
2	[redacted]	**Experience**: Out of all the modules I took this semester, this one is hands down, the more frustrating thing to go through, and it's not because I didn't like the subject, it's because I wasn't catching up to the lectures and concepts as quickly as the other students did. Feedback sessions were always a bit nerve-wracking to me; I remember feeling so very nervous the first few times, my voice was even shaking a bit as I presented my work (I really hope no one noticed), I immediately noticed how much more brutally honest Mr Vinod was compared to all the other lecturers when it came to criticizing our works. I was	Realisation, Feedback, Transformation Motivation	https://pat[redacted]46425.blogspot.com/2020/11/t[redacted]-final-compilation-reflection.html

Figure 7 Matrix: The reflections are compiled in a matrix for the purpose of analysis and categorisationin order to identify themes. These broad categories would later evolve to emerging themes.

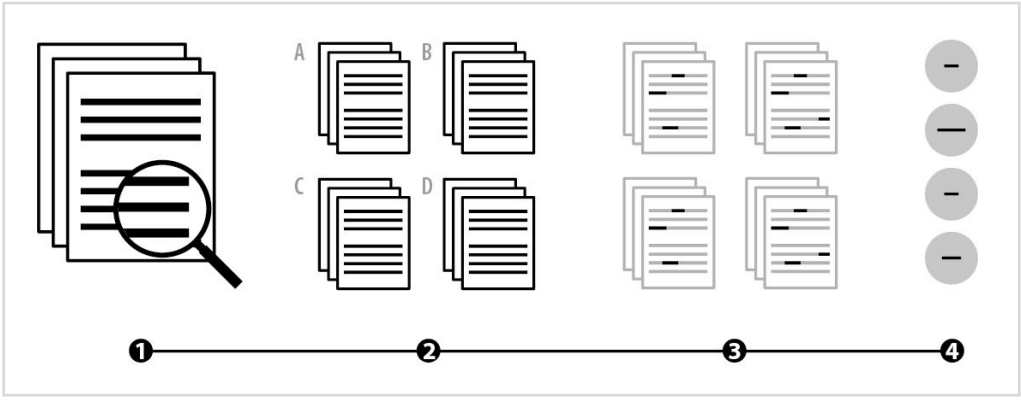


Figure 8. Thematic Data Analysis – 1. Reflections were read and re-read to develop intimacy with the data. 2. The data was analysed and then categorised. 3. Analysis of the categories resulted in emergingthemes. 4 Finalised themes.

Some of the statements were grammatically corrected without altering the intent of the student's reflection for the purpose of clarity. There were instances where the reflections would fall under two or more themes, the researchers would re-read these reflections to identify which theme was the stronger.

3 Findings

Upon studying the qualitative descriptions in the raw data, 4 themes emerged - Realisation, Motivation, Development and Transformation. These 4 themes emerged as the researchers studied the data and found that similar terms and ways of expressing were used by the students to share about their learning process. As shown in Table 2, the qualitative descriptions are arranged according to the themes that have emerged from studying the raw data.

Realisation is when the students learnt that their previous perception or mindset of the module/task/subject is now different after attending classes and working on projects, *"This class really helped me to understand the importance of Typography in design. I never knew that type expression, formatting, layout, etc. played important roles to create a meaningful design."*

When the students describe how they were excited and thus encouraged to do better, whether from an internal (intrinsic) or external (extrinsic) source, that is seen as motivation, *"They taught us how to be critical and resilient, whatever the feedback is. I found myself improving because of that, because I kept encouraging myself to work harder to receive their compliments."*

Development is said to take place when the students give examples of how their work has been showing changes from the first attempt, *"I personally notice my improvement, especially in technical skills and judgement."*

When the students express and notice how they have changed in their view and understanding, having gained new knowledge, and perhaps even discovered their own strengths and/or weaknesses, that is seen as transformation, *"This module has given me a new understanding […]. This new habit of mine as a design student now helps me to create better works through observation."*

In other words, these 4 themes are part of the process of learning, in no exact order, where the students' continuous experience during the semester contributes to their new understanding and knowledge. According to Kolb (1984) [10], "Learning is the process whereby knowledge is created through the transformation of experience".

The findings are in line with the research objectives, which are to understand students' learning journey through their reflections and to reflect on teaching practice by using the rich data fromstudents' reflections.

Table 2. Themes that have emerged from the qualitative data.

Raw data reflections	Categories	Theme	
	A		
	1. I realized that I needed to broaden my horizons. I'm too conservative with my works, resulting in mediocredesigns.		
	2. I learnt that what looks good to us is not necessarily good to others. We need to see from many perspectives.		
	3. I realize that keeping our e-portfolio updated every time we finish our work is a good thing, as it records our work progression.	Category Realisation	A
	4. Keeping the e-porfolio up-to-date wasn't an easy task but it really does help to record all the processes and to see how far I've come.		
	5. I also found that I am better able to accept criticismnow because of the feedback sessions.		
	B		
	1. Even though […] I was feeling down after comparing my work with my classmates' […], I try to use it as motivation and inspiration […]. Seeing better work motivates me to learn new skills and observe more.		
	2. I liked the difficulty level of this course because Mr. X and Mr. Y always keeps you busy and this is how I learn the most.		
	3. I liked this course the most because there was a certain level expected of us. With some other classes, I felt like the level was set too low […].	Category Motivation	B
	4. Thanks to Mr. X's and Mr. Y's teaching style of checking our work progress every week, it gave me a sense of urgency to stop procrastinating and start working on my projects.		

5. I still remember the first time I received my first compliment, and honestly getting compliments and making good designs has been my drive doing this module.
C
1. Thanks to the regular feedback […] I'm able to develop my work […] pay extra attention to the details that I didn't really care about before. I learned new and better techniques to create better typography works from this module.
2. I'm astounded by the overwhelming amount of details that exist […]. The amount of consideration and care that goes into the little details […], I find myself practising this habit in all my other modules.
3. Throughout the experience, I realize that every subtle difference in a letterform will ultimately create a distinct appearance and uniqueness in a font.
4. I personally notice my improvement, especially in technical skills and judgement.
5. […] it was a really good experience to get creative every single week and come up with new ideas, new concepts and new mindsets.
D
1. This module has given me a new understanding […]. This new habit of mine as a design student now helps me to create better works through observation.

Category

2. We see typography in our daily routine without even realizing it. I have begun to identify all the various typographic designs around me now that I have learned how much work and thought goes into each letter.		
3. After picking up this module, I now pay more attention to my surroundings.	Category Transformation	D
4. I noticed my eye for design has become more critical compared to the beginning of the semester. This is something that I appreciate and am grateful that I was able to take away from this module.		
5. I have a newfound respect for Graphic Designers and I kind of find myself looking at (in my opinion) good, impactful ads to gain inspiration from.		

4 Discussion

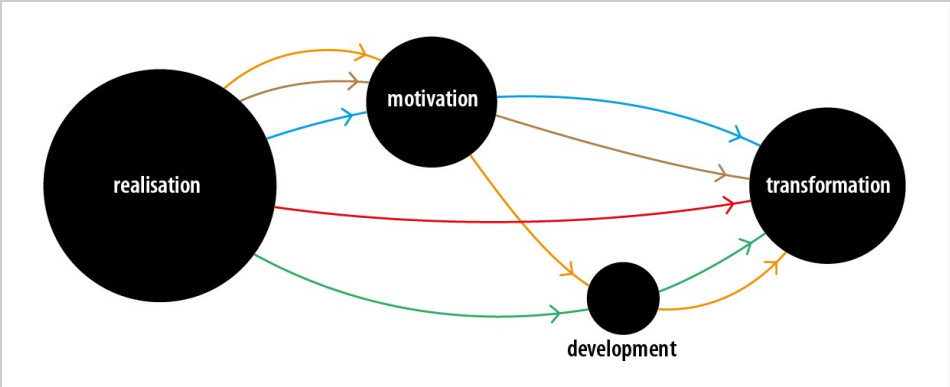


Figure 9. Non-linear Evolutionary Pathways

Having identified the themes, they are arranged in order according to the number of times each theme is referenced and the number of participants referring to each of them. At first the

researchers assumed that the stages were hierarchical - 1. Realisation, 2. Motivation, 3. Development, 4. Transformation. However, upon further organising the raw data from Table 1 to Table 2 and analysing Table 2, they saw that the references were not equitable across the four themes. To visualise these results, Diagram 2 was produced. The size of the circles represents the frequency each theme is referenced and the number of participants referring to it.

As seen in Figure 9, the biggest circle is Realisation, followed by Transformation. This is in accordance with the numbers featured in Table 2. This shows that Realisation is the most obvious that the students noticed of themselves in the learning process. With Realisation having the highest number, this clearly suggests that despite having no actual order, it is most likely the first step towards transformation in our students' learning process. This is due to the highest number of students having described themselves realising that their perception or preconceived ideas have changed whether it was during or after the semester.

The second biggest circle is Transformation. Having the ability to discern the difference they see in themselves - be it knowledge or skill wise - at the end of or during the semester marks a change in them, thus transformation. From the findings, it was discovered that there were instances where realisation and transformation were often described in the same sentence or paragraph. For example, one student stated, "*I realize that keeping our e-portfolio updated every time we finish our work is a good thing, as it records our work progression. I also found that whenever I see posters, I will analyse and evaluate the compositions or arrangement of textual information.*" Another student had mentioned, "*This module also gave me a new understanding about typography. Now, whenever I am at a public place, I try to analyze any typography works I see. I'm now able to tell which works are given a lot of thought and those that are just made without any effort and thought.*" This led to the researchers' finding that these two themes of realisation and transformation are on either end of a continuum.

Realisation may happen not only at one point of the semester but also throughout the course. As in the words of one student, "*Throughout all the projects and exercises, what I observed and realised the most is the importance of feedback*." This suggests that students could realise their strengths and weaknesses, mindsets, or preconceived ideas, during the semester. Nor is transformation only limited to the end of the semester as it can occur throughout the course. This seems to be true for a student who expressed, "*After picking up this module, I now pay more attention to my surroundings*." This student's learning has transformed her to become more observant upon taking up a particular module where she realised that her surroundings could serve as visual inspirations for her designs.

The transformation that is noted in the students' reflection seems to be supported by Mezirow's transformative learning theory because they were being critical of themselves and their learning process and having discovered some differences in their thinking and understanding of the module contents. According to the theory, learners gain new understanding through change. The students cognitively noticing the change in their own attitude and mindset could be read as realisation. This is evident in one student's reflection, "*We see typography in our daily routine without even realizing it. I have begun to identify all the various typographic designs around me now that I have learned how much work and thought goes into each letter*." Hence, realisation (noticing cognitively) and transformation (change) are on either end of a continuum.

Between the two themes on the continuum of Realisation and Transformation in Figure 2, one will be able to see that the second smallest circle is Motivation and lastly is Development. Studying the data has enabled the researchers to see that motivation and development could take place in random order, depending on the students' own learning capabilities. This could mean that there is a non-linear process of learning that takes place between the time when students realize something about themselves and having transformed in a certain way in the course of their study. In this non-linear process, two events have contributed to their realisation and transformation, and they are motivation and development.

As mentioned previously, and evident in the data analysis visualised in Figure 2, motivation and development may occur in random order between realisation and transformation. Some students were firstly motivated and from there their abilities (knowledge and/or skills) developed, while for others, development in some ways could be the motivation to do better in other areas or modules.

For one student, the motivation was extrinsic in nature, "*I still remember the first time I received my first compliment, and honestly getting compliments and making good designs has been my drive doing this module*." For this student, it is the compliments by the lecturers that is the extrinsic motivation for her to improve and subsequently develop on her design skills. Another student found her motivation intrinsically, "*Even though […] I was feeling down after comparing my work with my classmates' […], I try to use it as motivation and inspiration […]. Seeing better work motivates me to learn new skills and observe more.*" Apparently, this intrinsic motivation to improve was based on her observation of others' exemplary works. This led to development in her understanding. For yet another student, development has been the source of her motivation where the developed skills in one module had motivated her to apply new knowledge in another module. This is found in her reflection, "*I'm astounded by the overwhelming amount of details that exist […]. The amount of consideration and care that goes into the little details […], I find myself practising this habit in all my other modules.*"

Although Motivation and Development are smaller circles visualised in Figure 2, between the two themes of Realisation and Transformation in the continuum, they are crucial to students' learning—as noticed in some of the students' reflections. It can be said that motivation and development are the inner workings that result in realisation and transformation. In short, motivation and development serve as building blocks between realisation and transformation. While motivation and development per se may not have been spelt out in the reflections, they can be reflected in students' "choices of learning tasks, the time and effort they devote to them, their persistence on learning tasks, and in coping with the obstacles they encounter in the learning process." [11] Motivation is a factor that contributes to transformation in learning [12].

According to Filgona et al. (2020) [12], development and transformation gained from experience in various learning activities have been related to motivation. This seems to coincide with the findings of this study as seen, for instance, in part of a student's reflection, "*I liked this course the most because there was a certain level expected of us. With some other classes, I felt like the level was set too low […].*" For this student, the constant challenges posed in class by the lecturers through various exercises and projects were taken as motivation to do better. Motive is the reason for a learner to make an effort. Motivation is defined by Makokha & Ongwae (1997) [13] as a desire, need, urge or drive to achieve a certain goal. This is resonated

in an entry of another student, "*Thanks to Mr. X's and Mr. Y's teaching style of checking our work progress every week, it gave me a sense of urgency to stop procrastinating and start working on my projects*." It is discovered through this study that motivation is one of the reasons that contributed to students' skills and knowledge development.

Despite the guidelines given for writing the reflection in the e-portfolio, not many students' reflection hinted at or showed the researchers about their motivation and development. This is compared to realisation and transformation, which were referred to in higher frequency and participant number, as shown in Table 2. There could be a few reasons for this. Firstly, some of them may not be inclined to write reflection in detail and therefore did not fully express their experience. Another reason could be some may only feel the need to highlight a significant part of their learning process when writing the reflection. Yet another possibility could be that reflection writing may be misconstrued as a means to express dissatisfaction only, be it about the learning process, the students themselves, the lecturers or the modules. All these inform the researchers of the possible need to design future reflection guidelines with more explicitness yet maintaining an open structure for students to convey their learning experience with little to no reservedness.

The reflective practice has thus enabled us to see and learn about the students' learning process. Equipped with the knowledge gained from this study, as educators, we have a better understanding of our pedagogy, curriculum design and students' state of mind (struggles, fears and inspirations).

Studying the data has confirmed that motivation and development are key features on the continuum of realisation and transformation. Feedback is an important part of our pedagogy, especially when working on problem-based learning activities, as in the case for The Design School where feedback is constantly provided as scaffolding. This study informs us that feedback has an inordinate amount of influence on students' mental state, which has a bearing on their motivation and development. Hence, more pronounced importance and utmost care should be placed on the manner that feedback is given; be it in the choice of words, intonation, facial expression and body language.

A central part of the curriculum design revolves around reflective practice in the form of an e- portfolio, where facilitators can glean the students' state of mind to be informed of future improvement to teaching. To obtain more accurate and articulate data in future, the design of the guidelines needs to be part of the reflective practice plan, i.e. the e-portfolio, and not something that is developed intuitively, which is the case presently. With the improvement of the reflection's guidelines, we would understand the struggles, fears and inspirations of students more effectively and clearly in order to give better feedback and perhaps even improve other areas of our pedagogy.

5 Conclusion

To recap, the research objectives are to understand students' learning journey and to reflect on teaching practice by using the rich data from students' reflections. From this research we found that realisation, motivation, development and transformation were key "evolutionary

pathways" to meaningful learning. The data suggested that realisation and transformation were at two ends of a continuum, where motivation and development played an important role in reaching eitherend. This non-linear process constitutes the evolutionary pathways.

For students to realise and transform through their learning experience, reflective practice is an important aspect that is to be purposefully planned into the curriculum and validated by relevant stakeholders. Not only will students develop their metacognitive skills — learn to monitor their own progress, learn to become more critical and improve their higher order thinking skills — the facilitators would also gather valuable insight that could help refine and enhance classroomteaching and learning.

In the course of writing this research paper, a few key limitations were detected. These limitations pertained to the reflective writing component of the students' e-portfolios, which formed the primary dataset. While a guideline was provided to students for writing reflections, some students tend to ignore the guideline and conflate the areas meant to reflect on. As a result, the writing would be muddled or lacked specificity. The second limitation had to do with the students' ability to articulate their thoughts. As the reflections being studied were from students with an artistic disposition, writing did not come easily and, as such, their ability to articulate their thoughts may have been hampered to a degree. As the e-portfolios do not allow for anonymity, the level of truthfulness/openness in students' writing may have been affected to a degree, making this another limitation to the study.

While it is beyond our control to address students' inability to articulate in writing and their honesty to reveal their actual experiences, we can address the conflation in reflection writing with the introduction of a more specific and student-centred guideline. For example, include students in the formulation of the guidelines by conducting focus groups where students provide input and ideas. With an improved guideline, the researchers might be able to obtain more accurate and richer data for future studies.

The Evolutionary Pathways — the continuum — gives us an understanding of how students' learning evolves over the first semester of the 14-week programme. This affirms the teaching and learning strategy of prescribing reflections through the maintenance of an e-portfolio. This activity benefits both stakeholders; facilitators and students in continually improving their respective practices. Hence, this research implies that reflections are important in creating meaningful learning. In doing so, we can understand and recognise the benefits of reflective practice, where facilitators and students simultaneously are "aware of the context, framework and our own knowledge as we analyse and interpret our experiences, interactions and responses." [8] [14].

References

[1] Mathew P, Mathew P, Peechattu PJ. Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology. 2017;3(1):126-31.

[2] Andrade MS. ePortfolios and online learning: Applying concepts of organizational behavior. International Journal of E-Learning & Distance Education. 2019;34(1):1-5.

[3] Watson CE, Kuh GD, Rhodes T, Light TP, Chen HL. ePortfolios–The eleventh high impact practice.International Journal of ePortfolio. 2016;6(2):65-9.

[4] Cambridge D. Eportfolios for lifelong learning and assessment. John Wiley & Sons; 2010 Oct 7.
[5] Ahmad TB. Teaching Remotely During COVID-19: Opportunities for Creativity and Innovation.IIUM Journal of Educational Studies. 2020 Oct 5;8(1):1-3.
[6] Bowman J, Lowe BJ, Sabourin K, Sweet CS. The Use of ePortfolios to Support Metacognitive Practice in a First-Year Writing Program. International Journal of ePortfolio. 2016;6(1):1-22.
[7] Miettinen R. The Concept of Experiential Learning and John Dewey's Theory of Reflective Thought and Action. International Journal of Lifelong Education. 2000 January-February;19(1): 54-72.
[8] Fook J. Social Work: Critical Theory and Practice. SAGE; 2002 May 21.
[9] Yin RK. Case study research: design and methods (ed.). Applied social research methods series. 2003Sep 12;5.
[10] Kolb DA. Experiential Learning: Experience as the Source of Learning and Development (Vol. 1).Englewood Cliffs, NJ: Prentice-Hall; 1984.
[11] Bakar R. The Effect of Learning Motivation on Student's Productive Competencies in Vocational High School, West Sumatra. International Journal of Asian Social Science. 2014;4(6):722-732.
[12] Filgona J, Sakiyo J, Gwany DM, Okoronka AU. Motivation in Learning. Asian Journal of Educationand Social Studies. 2020;10(4):16-37.
[13] Makokha A, Ongwae M. Trainer's Handbook: A 14 Days Teaching Methodology Course. GermanDevelopment Service, Kenya (Ded); 1997.
[14] Fook J, Askeland GA. The "critical" in critical reflection. In White S, Fook J, Gardner F, editors,Critical Reflection in Health and Welfare. Open University Press. 2006. p. 40-53.
[15] Hickson H. Critical Reflection: Reflecting on Learning to be Reflective. Reflective Practice. 2011 December; 12(6): 829-839.
[16] Schön DA. Designing as reflective conversation with the materials of a design situation. Knowledge-based systems. 1992 Mar 1;5(1):3-14.