Speed Managements in PBL (Project-/Problem-Based Learning) for Maximization of Creative Potential through Human-Based Digital Literacy

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Abstract:

Speed is a key issue in the Digital Era: people today work faster than in the past. However, the concept of "rushing" still carries a negative connotation of stress and sloppiness. Educational reformer John Dewey said that humans learn by doing and Mihaly Csikszentmihalyi's 'flow' theory emphasized on time of concentration. Therefore, creative exploration is not possible when rushed; the successful Finnish education system allows enough time for students to explore by giving them less homework, according to BBC News (Coughlan, 2016). The advertising agency Landor prohibits their designers from using a computer at the beginning of creative projects because skipping some steps such as hand sketches may limit creativity. On the other hand, today's students enter university with different levels of software skills and their learning speed varies. This case study applied human based digital literacy to solve the speed issues. 11 classes (about 20 students per class) of a 100 level/basic graphic software course conducted in Kuwait are the focus group.

The graphic design major is project/problem-based itself, as most of the assignments are studio-based projects and design is a problem-solving process. In this case study, human-based digital literacy –selective usage of technology with emotion-based communication– was conducted. Screen recordings taken with Apple's QuickTime were provided for slow learners to listen to the lectures repeatedly and the gamification of a quiz plus Google tools such as Sites were provided to speed up by motivating the students' curiosity in funware; step-by-step instruction supplement digital files uploaded on Moodle were useful for not only slow students but also fast students to learn at their own speeds. Some AI education was attempted, as collaboration between human and machine is encouraged in today's education. Plus, since people should feel comfortable to enhance his/her creativity, this study emphasized emotion-based communication techniques, such as speaking to students in a mild tone for engagement and motivation. Lastly, since

today's students rush creative processes, rubric-based process critique evaluations were conducted so they would slow down and pay attention to each stage of their process.

Along with the regular classes above, a voluntary, one-on-one Software Support Session was conducted. The session was created mainly to support the slow learners when they needed help. It was interesting that the students did the same classwork much faster than when in class. It means that being slow may be due to other reasons, such as not being able to focus when in a crowd. In fact, some outstanding students are slow learners and creativity does take time; therefore, being slow should not be considered a sign of inferiority. Interestingly, an unexpectedly large number of students who did not seem to need help also came to the session.

PBL is interactive mentoring, so human factors studies for student-faculty engagement are crucial. This study of human-based digital literacy in PBL will not only enhance the discipline but also contribute to other human related studies such as user experience design, artificial intelligence education, and smart city design.

Keywords: speed issues in PBL, human-based digital literacy, motivation, creativity, emotion-based communication in PBL, student engagement

Type of contribution: research paper

1. Introduction
1.1. Conundrums of Speed Management in PBL
1.1.1. Mutual Communication VS. Speed Issues
The study of Graphic Design is PBL itself because design is a problem-solving process for a client; the main difference between design and fine art is whether the projects are industry-/client-based or not. The target course of this study is a basic graphic software learning course composed of the following two parts: skill learning and creative projects. Since PBL is more of interactive mentoring than lecturing, proper **communication** between a faculty and a student matters much for student engagement which leads to successful learning outcomes (Fellipe, 2017, p. 2). The word for "communication" in Korean, *soh-tong*, includes the meaning of **mutual** interaction (Kim, 1987, p. 1101).

However, there have been **speed management** issues that may disrupt the communication, such as the following:

1) Challenges in Skill Learning

Cell-phone usage throughout the world rose steadily to 65% and usage of the Internet rose up to 48% by 2017 (Rosling, 2019, p. 93). Even children can evaluate the harmfulness of online content (Mascot, 2019). Many students are quite tech-savvy, and it may be a challenge for a classroom because there are **big gaps in tech-usage levels among students**. Unfortunately, some high-tech students ended up feeling bored and some low-tech students failed the course.

2) Challenges in Creative Projects

Bill Gates said that the 21st century will be the time of speed (Gates, 2001, p. 15). For example, the popular term "QR code" stands for quick response. Unfortunately, rushed communication between a faculty and a student can hurt creative education because the concept of **"rushing"** still carries a negative connotation of stress.

1.2. Theoretical Backgrounds
1.2.1. John Dewey: Humans Learn by Doing

Educational reformer John Dewey said that humans **learn by doing**, so they should be allowed **enough time** of his/her own explorations. The successful Finnish education system allows enough time for students to explore their world by giving them less homework, according to BBC News (BBC, 2016).

1.2.2. Emotion-based Education: Patience

Since PBL is an interactive mentoring, moments of **patience** are necessary in conversations. Psychologists emphasize the importance of speed management in conversations: no one should overpower a conversation by rushing (Ryu, 2019). In fact, the Longman Dictionary of Contemporary English partially defines rushing as **violence**. Plus, Jared Diamond said that the successful leadership is of President Harry S Truman's who took advantage of the given situations in efficient ways unlike of the others' who insisted executing in their own styles (Diamond, 2019). Understanding given situations should require more **patience** than insisting one's own style.

1.2.3. Foundational Goals of Education: Humane Goals

Talking about the foundational goals of education, Nelson Mandela said, "Education is the most powerful weapon which you can use to change the world (Brainy Quote, 2019)." The world is changing rapidly, but the foundational goal of education should not change despite the many advancements. Nah said that today's advancements, such as genealogy, should not be selfish by producing competitive genes but rather genes that care for others, because that is the humane characteristic compared to robots (Nah, 2019, p. 246).

Empathy issues have been highlighted nowadays: Emi Kolawole from Stanford University d.school said, "I can't come up with any new ideas if all I do is exist in my own life (Designkit, 2019)." Moreover, OECD (Organisation for Economic Co-operation and Development) pointed out the issue of digital citizenship, such as being kind in online communications (Chung, 2019).

1.2.3. Human Ability

Human ability can be a very powerful tool: artists such as Renoir overcame stress during a war by creating art. Mental health issues are in the spotlight these days, but even overcoming stress from a tragic war is possible by humane abilities such as creativity. However, Jared Diamond is concerned that today's texting communication affects humans negatively: humans are becoming more aggressive because it is easier to disregard other people's feelings when one is sending messages through a screen (Diamond, 2019). Plus, staring at cold, hard screens more than the warm and soft physical beings of humans may affect humans to become less **emotional**. Today's education should put human ability as the top priority over tech usage.

1.3. The Target Course and Students

Table 1: Details of the target course and students of this study

Category	Description	Other
Institution	American University of Kuwait	

College	College of Arts and Sciences	
Department	Department of Art and Graphic Design	
Course title	Digital Foundations	
Major	Graphic Design	It is a required course for the two majors but other majors take the course as an elective course.
	Communication and Media	
Number of students	About 20 students per class	Mostly freshmen
Gender	Male and female both	Mostly female
Total number of classes (sections)	11	1 to 3 sections per semester were taught.
Years taught	From Fall 2015 to Spring 2019	There are 2 semesters per academic year.
Course goal	Learning basic graphic software and using the skills for the creative projects assigned in the course.	Adobe CC (Creative Cloud) software was taught (plus other open source software as extra credit learning). Since it is a basic level course, creativity meant **diversity** mostly for the students' talent discoveries.
Meeting pattern	2 times per week of 1 hour and 15 minutes class	Day time course

2. Human-based Digital Literacy Teaching Methodologies

2.1. Methodologies for Skill Learning

2.1.1. Step-by-step Instruction Class Supplement Sheets on Moodle

The class supplement sheets provide step-by-step instruction of each skill. For example, Figure 1 shows how to create the Apple logo in 3D. The students downloaded the files from Moodle at every class and used them along with listening to my demonstrations. Through this methodology, the overall learning outcome levels rose higher because slow (low-tech) students were able to catch up on their own and fast (high-tech) students

moved on to the creative projects earlier and took advantage of the extra time. A couple of high-tech students won off-campus **awards**, even though they were only freshmen.
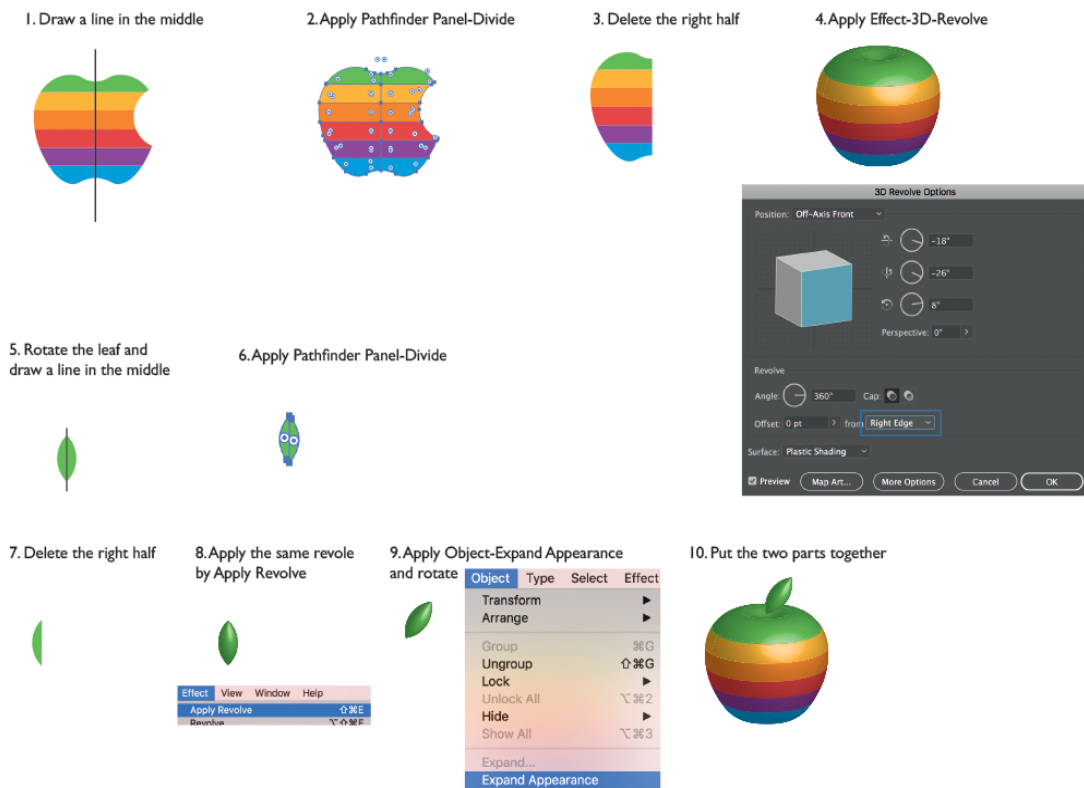

1. Draw a line in the middle 2. Apply Pathfinder Panel-Divide 3. Delete the right half 4. Apply Effect-3D-Revolve

5. Rotate the leaf and draw a line in the middle 6. Apply Pathfinder Panel-Divide

7. Delete the right half 8. Apply the same revolve by Apply Revolve 9. Apply Object-Expand Appearance and rotate 10. Put the two parts together

Figure 1

2.1.2. Lecture Recording by Apple QuickTime

The screen recording's role was similar to the supplement files above but used outside of the classes. It was easy to do in QuickTime on a Mac: it recorded both the lecture screen and my voice. The recorded videos were posted on Moodle (Figure 2).
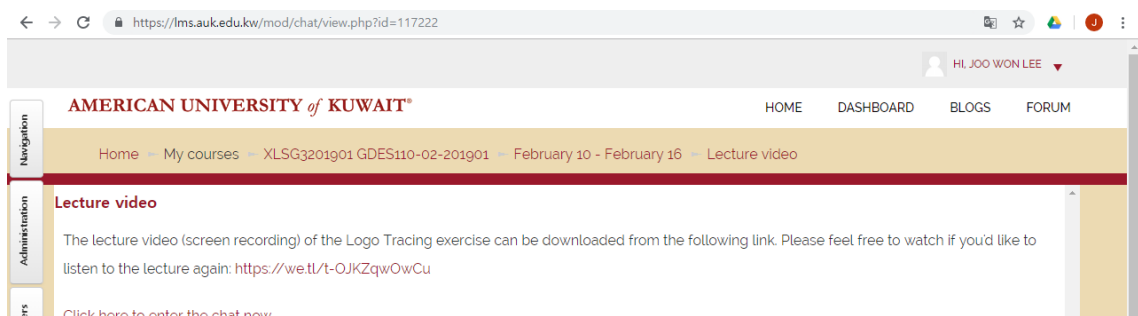

Figure 2

Interestingly, both slow (low-tech) and fast (high-tech) students needed a human teacher along with the video lectures, just like Peter Drucker, the author of Managing in the Next

Society, recommended e-learning for students to review **before or after offline classes** (Drucker, 2002, p. 133). It is similar to Flipped Learning (Daily Dental, 2019), a popular topic of today's education but some students still needed human teacher to understand the contents fully.

2.1.3. Google Tools

Google Drive was introduced to the students for saving their files, because unlike some online educational services connected to the central IT system of a university, Google Tools are accessible even when the university's system is down. Plus, Google Sites for building websites was introduced to the students for easy and fast website publications (Figure 3).
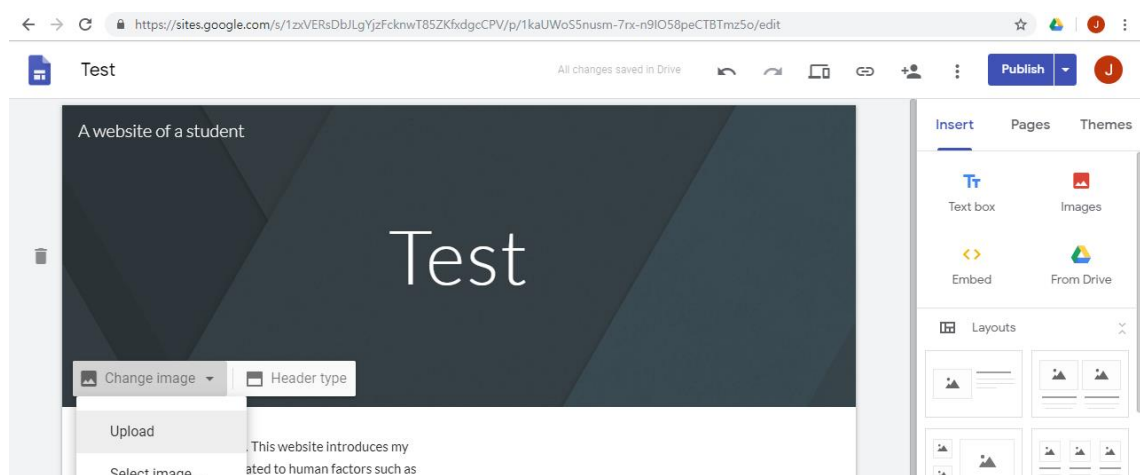

Figure 3

Google Tools were easy to learn, according to my Google Educator Certificate experience, and since Google Tools are "separate" tools, an educator can save time by using only the features that s/he needs.

2.1.4. Gamification

Nonsan City, a military city in the Republic of Korea, has created a VR park for public education of the military experience (City of Nonsan, 2019). Gamification in education earns more of students' attention. Since this target course includes non-graphic design majors who are not interested in art, funware was used as teasers. Especially, since today's art and design is time-based, screen based quiz is necessary. Plus, YouTube channel collected recommended time-based media projects by a faculty can be useful. However,

because funware cannot teach advanced contents, gamification did not matter much to the level of overall learning outcome, according to my basic typography course that used a digital game in multiple semesters. (The course provided a puzzle game so that students would pay attention to details of letter designs.) Furthermore, students may get motivated in short term but also may want fun ways of learning only after getting used to gamifications and it can be problematic because a creative process requires efforts sometimes such as perseverance – false motivation. In fact, WHO (World Health Organization) has classified game addiction as a disorder (BBC, 2018).

2.1.5. Emotion-based Human Communication in One-on-one Session

Screen-based communication may affect negatively humans to become less humane (Diamond, 2019), and so one-on-one sessions that allow closer in-person communication is important. One blind professor's empathetic ability has been praised, as his impairment enhanced his ability to understand students' diverse ways of learning (Bush, 2017).

Software Support Session, a one-on-one session originally created to help students who are slow to learn software skills, has been conducted for over a year (Figure 4). Students came to the session voluntarily when they felt they needed extra help. Through the session, it turned out that the reason for being slow can be **simply** not being able to concentrate when in a crowd. It was surprising that students did the same class work much faster in the one-on-one session. Furthermore, **outstanding students** also came to the session. **Being slow to learn should absolutely not be considered a sign of inferior intellect or aptitude.** In fact, there are a number of slow learners who became **outstanding** professionals (Cho, 2017). For example, Richard Branson, the owner of Virgin Travel Group, is dyslexic.

Office: Liberal Arts Building B529
Office Hours: U 2-3pm, M 11am-4pm, (The following are extended hours: T 1:30-2pm, W 11-4pm, R 2-3pm)
*Email the instructor to set up an appointment if the office hours above do not fit to your schedule.
**Thursday office hour will be placed in the computer lab B311 (Software Support Session).
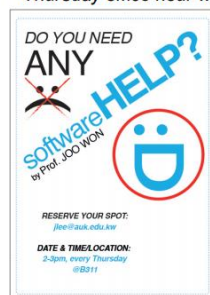
Figure 4   The Software Support Session is announced in the syllabus as a part of the faculty's office hours.

Students may not be fully confident when they first come to the session, but as they became comfortable with learning atmosphere and customized teaching style, the session **triggered motivation** of the students, an important asset of PBL (Stojceski, 2018). And the **motivation boosted the students' learning speed** later on.

I met with more students by making one of my six office hours per week this one-on-one Software Support Session. Since the session was conducted in a computer lab instead of a faculty office, I was able to interact with more students, who felt more comfortable working with me by building a different sort of rapport. The students' projects turned out more successful accordingly. Below are the details of the one-on-session (Table 2):

Table 2: The one-on-one session details

Category	Description	Other
Time	1 hour per week	During the faculty's one of the six office hours
Location	Computer lab	Unlike the other office hours in the faculty's office, the session was conducted in a computer lab so that more number of students can speak with the faculty.
Number of students	1 to about 10 students per session	Sometimes, 1 student easily took 30 minutes or 1 hour.

2.2.   Methodologies for Creative Projects

2.2.1. Talent Check

Understanding a person's own unique characteristic such as talent is not only important in university level education (Dawkins, 2019) but also even in regards to freedom of human beings (Mill, 2019, p. 135-136). However, students, especially at lower levels, such as this 100-level target course, do not understand their own talent. Performing a talent check by assigning the students to write a paper discussing their favorite artworks

helped both the students and me to better understand their talent and provide a better base from which to give comments. The talent check saved time in the long run because the students felt more comfortable and **motivated** working on their projects. Plus, using the artwork images was **easier and faster** for the students to understand the concepts of visual principles such as contrast, value, or harmony, because they were already familiar with the visual example artworks.

Websites with high quality artwork examples supported these purposes, but when Google Art and Culture was introduced to the students, due to the low quality of the overall application such as quality of images, the students preferred high quality print based publications though it took a couple of months to receive the books.

2.2.2. AI

Nowadays, even children participate in drone-building programs such as at the Unmanned System World Congress. Adobe CC has introduced AI features in Photoshop that automatically analyze a photograph and save time. Google Assistant's image finder can be useful since today's design majors take a tremendous amount of photographs. Google Art and Culture's Art Palette (Figure 5) brings up artworks that match with the color scheme of a user. It can be used for **talent check**: students select any image they like such as a photo they took and the software brings more artworks that are similar to the color scheme of the artwork a student chose. By getting to know more artworks that have similar color schemes, students can broaden their knowledge in art and expand their creativity by starting from a simple image they like.
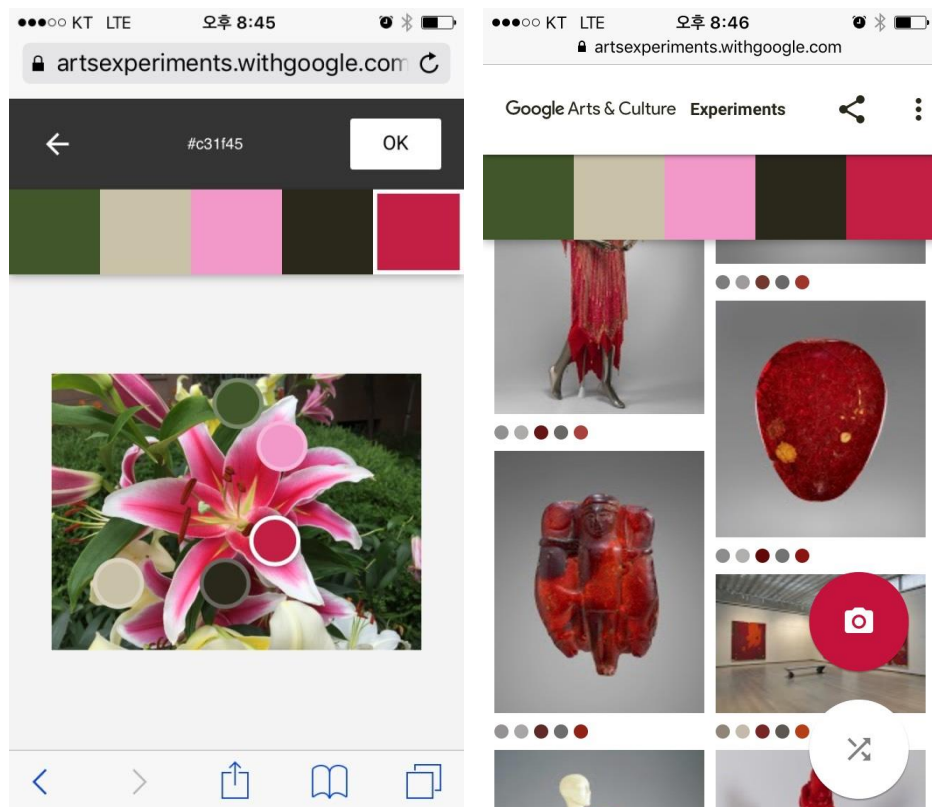
Figure 5   Students use a photo of his/her own and the AI searches artwork images of the similar color scheme.

On the other hand, the artwork images mentioned above and Google Art and Culture's artwork collection is still not as good as looking at artworks in physical museums: the number of artwork collection is less and the quality of the artwork images is not vivid enough. However, some virtual reality (VR) designs that show the things that are difficult to view such as the inside of ancient caves simulation is useful. Such museum digital designs have been awarded globally and that is the reason why VR skills have been used for practicing usual cases such as emergencies or military purposes.

Other than usage of tech for not necessarily public areas, because tech brings people's attention easily in public usages, AI can be a great teaser. However, it is not yet good enough for advanced learning in creative art. For example, creativity in art is **complex**, but the results of Art Palette were too simplified. The failure of autonomous automobiles is also because human behaviors are highly complex (Boudette, 2019). Even smart cities need human workers (Saxe, 2019) and Massachusetts Institute of Technology highlights their human assistant on their e-learning program advertisements.

2.2.3. Emotion-based Communication in Classrooms

Humans perceive information not only through text but also their senses (Nah, 2019). Therefore, emotion-based communication such as speaking in a **mild tone** can enhance the creativity of PBL, because **student engagement** becomes higher and creativity is enhanced by feeling comfortable. For example, one of my students from a 200-level digital imaging course was selected as an ADAA (Adobe Design Achievement Award) semi-finalist less than 2 years after I started teaching at the institution. At that time, I did not even understand the local culture, so I could not lecture much, but mostly listened to the students with **patience**. It seemed that the patience turned into some sort of **atmospheric power of trust, respect, and not-fearing any failures that constantly motivated the students.**

2.2.4. Rubric-based Process Critique Feedback

Service Design reports that some students' projects may become vague because of the opportunities for free exploration (K-MOOC, 2019). The students' project directions may not be clear and so, while encouraging students to explore, clear feedback based on the client's need –the rubrics– should be provided to prevent the vagueness.

According to Stojceski, "A facilitator does not give constructive feedback/criticism" is a poor supervision in PBL (Stojceski, 2018). Moreover, providing rubric-based feedback is important not only at the end of a project but also during the process: the rubric-based process critiques helped the students not only to stay on the right track and avoid wasting time but also to be slow enough for each stage to allow for more creative outcomes. The feedbacks were written based on the in-class discussions and emailed (Figure). Lastly, basing on each students' own **talent** helped to motivate the students.

Rubric No.	Strengths	Weaknesses	Score
1. Consistent concept with the poster design: 10%	Yes		
2. Creative usage of grid: clear alignment, repetition of a unit, clear hierarchy: 10%	Pretty good		
3. Layout rules: 1:2:3 rule, The law of thirds, Grouping: 10%	Pretty good		
4. Basic typography rules for paragraphs: 60% - Proper choice of font - Do not use more than 2 fonts. Use a serif and a sans-serif font.		Widows	
- No orphans or widows - Column width: Between 35 and 70 characters including space - Leading: Extra +2pt from the default amount in Adobe Illustrator		Captions + Photos	
- Tracking/Kerning: -5 from the default amount in Adobe Illustrator		Back cover needs to be more subtle	

Figure 6   This rubric based feedback example is from 200 level typography course but such feedback was provided to the target course also.

2.2.5.   Reference List in Syllabus Posted on Moodle for Potential Enhancement

In graphic design, the reflection of current trends in projects is a must. Plus, reference recommendations are crucial, especially for remote institutions such as AUK, because from the students' perspective, it is difficult to be informed on which references are high-quality, as they are relatively apart from so-called mainstream information. Though some students said that they are not interested in the trends, when I asked if they would like to speak with a wider audience, they said that they would – essential based communication.

Additionally, quality references **motivate** students better by setting a higher bar for them. Students in the Gulf region have high artistic potential thanks to their long, rich Arabian heritage and tradition, but critically, when they used low-quality references, their creative outcomes sometimes turned out **worse** than their potential. On the other hand, websites that provide high quality examples such as design awardees' projects enhanced maximization of potential. Especially, since they are accessible at any time and faster than international book orders, these references were a must to check out.

2.2.6.   Skype Session with an Institution Overseas

My lecture and exhibition curation in the Republic of Korea at the Division of Design and Art, Yonsei University about illustration and typography projects created by the American University of Kuwait (AUK) students and faculty members as well as local designers was broadcasted through Skype. It was conducted as a part of the course and the students attended in one of the computer labs on campus to watch and participate in the broadcast. It turned out to be encouraging for the students especially for the ones who exhibited and interesting to exchange thoughts of the students in Kuwait and the Republic of Korea.

Figure 7   The small thumbnail on the right top corner is the attendees from AUK.

3. Conclusion: Human-essentials-based Digital Literacy for Speed Management of Creative Processes

When students' **potential** is high, such as easy access to large amount of information in the digital era by the help of tech, it turned out that a human **essential-**based education such as usage of funware along with communication with **patience**–delicate approaches– enhanced students' creativity more than a simple transfer of knowledge. Plus, when students are emotionally satisfied, their **motivation** increases, so this is the best way for students to be automatically managing their speed either slowing down or boosting up.

Since creativity as in **diversity** is related to identity issue, a human right, usage of digital needs to be well balanced with a clear priority: putting human first and tech next. Asking "Who Are You (WAY)?" –identity– is the right WAY. Que? No, wait! (Ku-wait) Running fast in the short term is less important because a creative process can be redundant and become delayed after all. Long-term results are what count, and boosting speed by **human values** instead of adapting tech without filtering is the best way, even if it may seem slow in the short term. Some "educational" videos have been linked to delays in learning skills (Pinola, 2019).

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