"Improving HE student skills for work & life performance readiness"

Proceedings of the 18th Annual SLAIHEE Conference

on Higher Education in Sri Lanka

organised by

Sri Lanka Association for Improving Higher Education Effectiveness

(SLAIHEE)

Friday 29 July 2022

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DEDICATION

Dedicated to the ever-reminiscent memory of Dr Shrinika Weerakoon BSc, MSc, MBA(Perth), DBA (Bath, UK), SEDA Accredited Teacher, ASTHE - an irreplaceable Higher Educational Developer

- a colleague, a friend, a guide, a change agent: who always found time to be there for you

- who epitomised a life that: "what you leave behind is not what is engraved in stone monuments, but what is woven into the lives of others" (Pericles)

   and

- in whose memory SLAIHEE has instituted an annual Award: "Dr Shrinika Weerakoon Memorial Award for the Best Paper in Changing HE student skills"

18th SLAIHEE Higher Education Conference

on

"**Improving HE student skills for work & life performance readiness**"

Friday, 29 July 2022, 9.00 a.m. to 12.00 p.m.

Held online via Zoom (the materials of this conference are available at www.slaihee.org)

A WARM WELCOME TO THE CONFERENCE

This is the eighteenth year since SLAIHEE was established as a non-profit voluntary organisation. From its establishment in 2005, SLAIHEE (Sri Lanka Association for Improving Higher Education Effectiveness) has organised an annual conference, taking pleasure to provide the only opportunity in Sri Lanka for our university staff to document and discuss the learning enhancements that they have been able to achieve through their subject-related teaching. For the first eleven years, the SDC at the University of Colombo was the organisational partner hosting this annual conference. Then, in its 12th SLAIHEE-SDC conference was hosted by the Staff Development Centre, Wayamba University of Sri Lanka and in the 13th SLAIHEE-SDC conference was hosted by the Open University of Sri Lanka. During 14th SLAIHEE conference, the host became a private HEI, the Sri Lanka Technological Campus with its newly established Centre of Excellence in Teaching, Learning & Innovation (CETLI). The 15th SLAIHEE conference was hosted by the Staff Development Centre, University of Moratuwa, Sri Lanka. Since 2020, the conference was held on-line, due to the COVID-related restrictions on meetings, as is followed this year.

This conference has become a Community of Practice and the only national conference in Sri Lanka that focuses exclusively on learning and teaching in the Higher Education (HE) context (SoTL, Scholarship of Teaching and Learning). This year's conference celebrates eighteenth years of SLAIHEE and 24 years since the first SDC was established in Sri Lanka (at University of Colombo). As pioneers in striving to maintain the quality enhancement of HE in Sri Lanka, SLAIHEE has faced and traversed huge challenges and our simple beginnings have enabled us to face these. What challenges the future holds are already palpable, specially with a change in training quality offered at the HE institutions, ethical questions besetting the provision of HE including online teaching provisions faced globally.

Theme of this year's conference "Improving HE student readiness for work & life performance" (for previous conference themes and proceedings, see: www.slaihee.org) is relevant because making students ready for work, as well as ready for life performance by HE teachers, seem to be severely challenged at present. This theme is therefore meant to gather evidence and show convincingly to others that, with a changed mindset to offer training for creating students' readiness, we can make change happen that all work and life performance-conscious people would value. The conference also shows how we can objectively capture evidence of what some of us achieve in making students' readiness via HE. Due to the post COVID 19, global pandemic and fuel crisis in Sri Lanka, the SLAIHEE Ex-Co decided to hold this year's conference also online via Zoom.

We take great pleasure in welcoming you, and our Keynote speaker, Prof Nelun De Silva, Professor in Microbiology, Sabaragamuwa University of Sri Lanka. The conference is of particular interest to all those with a concern and commitment to the quality and fate of future Higher Education in Sri Lanka, including;

- lecturers, managers and administrators in Higher Education
- educational and staff developers
- policy makers

We hope you have an extremely enjoyable experience that will motivate all of us to enhance the quality and usefulness of the higher education experience, mainly to our students.

"Improving HE student skills for work & life performance readiness"

CONFERENCE PROGRAMME

08:30 – 08:55 :   Admitting into Zoom & related Inquiries

Inauguration [Click here for Zoom Link A **(Meeting ID:** 993 0752 2246 **and Passcode:** 609315**)]**

09:00 – 09:05 :   Conference Announcements by Dr. T. Sivakumar, Past President SLAIHEE

09:05 – 09:10 :   Welcome address by Prof. Sunethra Perera, President, SLAIHEE

09:15 – 09:45 :   Keynote Address by Prof Nelun De Silva, Professor in Microbiology, Sabaragamuwa University of Sri Lanka.

09:45 – 09:50 :   Vote of Thanks by Dr Iroja Caldera, President-Elect, SLAIHEE

Technical Sessions (on-line: as 2 parallel sessions: 10 papers in 2 Sub-Themes)

10:00 – 11:40 : Presentations & discussions of peer-reviewed papers

	Parallel Sessions & their sub-themes	
	Session A (Link A**)**	**Session B (**Link B**)**
10:00 - 11:40	**A:** Enhancement of learning skills	**B:** Online delivery, Assessment & Feedback
Zoom Links	Click here for Zoom Link A **Meeting ID:** 993 0752 2246 **Passcode:** 609315	Click here for Zoom Link B **Meeting ID:** 898 2015 0107 **Passcode:** 092774

11:40 – 11:50 : Filling (on-line) Feedback Form [link: Click here for Feedback Form]

11:50 – 12:00 : Conference Closure by Prof Suki Ekaratne

       TEN MINUTE BREAK

AGM of SLAIHEE: Only for SLAIHEE 2022 members - Click here for Zoom Link A
                (Meeting ID: 993 0752 2246 **& Passcode:** 609315**)**

12:00 – 12:30 : Annual General Meeting (AGM) 2022 - for voting members

12:35 :   Closure of Activities

"*Improving HE student skills for work & life performance readiness*"

SLAIHEE Conference, July 29, 2022 - Session Timetable

(page #s refer to pages in Conference Proceedings Book: to plan attending presentations, you can use the 'conference time-planner' on p ix)

Parallel Sessions of Paper Presentations (in Virtual Link# A & Link# B)		
Session Theme: **On-line Venue:**	**Session A (Link A):** Enhancement of learning skills Click here for Zoom Link A **Meeting ID:** 993 0752 2246 **Passcode:** 609315	**Session B (Link B):** Online delivery, Assessment & Feedback Click here for Zoom Link B **Meeting ID:** 898 2015 010 **Passcode:** 092774
Session	**Dr. Priyantha Bandara**	**Mrs. M. Prabhashrini Dhanushika**
Time	**Paper #, page numbers, author(s), Paper Title**	**Paper #, page numbers, author(s), Paper Title**
10.00 - 10.20 a.m.	A.1 – on **pp. 1-5** (by) Wijetunge MTN	B.1 – on **pp. 26- 30** (by) Weerawarne DL
	Improving English Speaking Confidence and Motivation in Undergraduates through Entertaining Task-based Activities (TBA)	*Evaluating the effectiveness of small groups with Belbin's team roles in online learning: Students Perception*
10.20 – 10.40 a.m.	A.2 – on **pp. 6-10** (by) Ruwaiha MRF	B.2 – on **pp. 31- 35** (by) Kuhendran T, Ranasinghe SB
	Storytelling as a pedagogical strategy in the Human Resource Management (HRM) discipline: Student perceptions	*From onsite to online and MCQs: Reflections on the suitability of changes to increase marking reliability in the assessment methods*
10.40 – 11.00 a.m	A.3 - on **pp.11-15**: (by) Somaratne MCW	B.3 – on **pp. 36 - 40** (by) Witharana WAU
	Enhancing learning skills through virtual experience-sharing sessions with industry experts: learner perceptions and performances	*Use of video demonstration of water quality instrumentation to familiarize basic instrument handling skill and student's perception of online teaching*
11.00 – 11.20 a.m.	A.4 – on **pp. 16-20** (by) Pabasara VGP, Srimala P	B.4 – on **pp. 41-43** (by) Halwatura D
	The use of self-evaluation as a tool to enhance students' reflective practice and their confidence in laboratory classrooms	*Use of reflective practice to improve teaching, learning and assessment*
11.20 – 11.40 a.m.	A.5 – on **pp. 21-25** (by) Rajapakse EMMN	B.5 – on **pp. 44 - 47** (by) Karunarathne HVVMP
	Application of teaching-learning activities to develop skills on self-preparation in students	*Use of lecture breaks for retaining students' attention in online mode: student perceptions and teacher observation*

Note: All the 'blue' font captions are hyperlinked (clickable) in this electronic version of conference proceeding book.

Useful notes and contacts

Conference Time Planner - Sessions **A** (Link A**)** and Sessions **B (**Link B**)**

Time	Session A or B	Paper No. (e.g. 1, 2, 4 etc.)	Pages of paper from book	Title /key words /authors	What aspect I can use in my work or explorer in this paper
10.00– 10.20 a.m.					
10.20 – 10.40 a.m.					
10.40 – 11.00 a.m.					
11.00 – 11.20 a.m.					
11.20 – 11.40 a.m.					
11.40 – 11.50 a.m.	Click here for Feedback Form				

Thank you for being here

x

Reviewers of papers;

Professor Sunethra Perera, University of Colombo

Dr Jinendra Dissanayake, University of Colombo

Dr. Ruwani Mayakaduwa

Dr. T. Sivakumar, University of Moratuwa

Dr. Iroja Caldera, University of Colombo

Prof. S.U.K. Ekaratne, SLTC /CETLI

Mrs. Abarnah Kirupananda, Informatics Institute of Technology (IIT Campus)

Dr. R.M.P.S. Bandara, Kotelawala Defence University (KDU)

Dr. Kasuni Akalanka, University of Sri Jayewardenepura

Mrs. M.P. Dhanushika, University of Moratuwa

The paper submission and peer-review process: papers that appear in this Book of Proceedings are in the form of `Full Papers', made up of sections comprised of Background / Purpose (i.e. Introduction), Methodology, Results, Discussion and Conclusions, References. Each paper has been accepted and printed after having undergone a thorough and rigorous peer-review process. In this process, an Abstract had first been submitted together with a Self-assessment Scoring Sheet. These abstracts were reviewed by the "Papers Committee", and relevant authors were invited to submit Full Papers. Each received `Full Paper' then underwent a double-blind refereeing process by two independent reviewers who provided referee reports and supportive feedback to be sent to authors justifying acceptance, improvement or rejection of each submission. A third referee was used whenever the first two referees were in disagreement. The reports of both referees were discussed, and the feedback was sent to authors to accept, reject or to do modifications, if any, to the Full Papers as recommended by both referees to meet the 'quality' standards. Authors had the option of not making the changes if they were able to justify why the referee-recommended modifications were not acceptable. Abstracts that were rejected, or not received by the deadline with the recommended modifications, were not 'accepted' and so, do not appear in this Book of Proceedings.

Abstracts plagiarised from others' work, when not acknowledged in the submitted Abstract or have a substantial component of plagiarised material, are in general rejected and followed-up by formally writing to the authors, through their institution heads, as practices that are unacceptable and looked down by the entire academic community worldwide.

All referees and presenters have, in this way, collaboratively contributed to enhancing the quality of Higher Education in our motherland. Even where papers were not accepted, we hope the detailed feedback given would have helped authors to improve their subsequent writing and submissions.

Improving English Speaking Confidence and Motivation in Undergraduates through Entertaining Task-based Activities (TBA)

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Abstract: It is a common discussion that undergraduates who have pursued their education at state schools in the rural parts of the country, are anxiety-driven and taciturn when it comes to communicating confidently in English language. Even though they have followed English language for 10 years at school level and also being aware of the necessity of confident communication as graduates one day, they still shy away at any opportunity to communicate in English. Considering this as the research problem, the main aim of this research was to identify how Task-Based Activities (TBA) can be effectively incorporated into the classroom context with a higher perspective towards entertainment. Deviating from the general teaching methods, it was hypothesized that administering entertainment related TBAs, will assist the learners to overcome their glossophobia and anxiety in speaking English in front of others. Socio Cultural theory by Vygotzky and Scaffolding theory by Bruner were also instigated while creating the TBA related lesson-plans according to Blooms Taxonomy (1956). A sample of 30 Undergraduates was selected based on purposive sampling. The teaching process continued for a period of 1 academic semester. The research design was descriptive in nature. Based on a pre- and post-oral test marks and interview process, data was analyzed though a mixed approach. Based on the t-test analysis on SPSS, the mean value in the post-test is higher and the paired sample co-relations is a significant difference of .000. According to content analysis, the major findings reveal that undergraduates gained confidence to speak English via entertainment related activities, in a free and calm environment, generated by the lecturer. Psychological freedom led them to come forward and express ideas while overcoming anxiety. Using games, inter-active activities, role-playing, dramas, technology assisted them to improve their confidence. Implementing diverse pre- during- and post-tasks during the TBAs also enhanced the enthusiasm in students. In conclusion it was found out from the results that assisting the learners to overcome anxiety in speaking English through interactive, entertainment-based lessons led by scaffolding, enhanced their confidence and motivation to communicate in English.

Introduction: English has become a global language at present and it is considered the key to knowledge, information, technology, communication, travel, trade and business. In response to the great demand for the language, people have begun learning English as a second or a foreign language in Asia. According to Herscovitch (2012) "Nearly one-third of the world's population is studying English, and it is predicted that by 2050, half of the world's population will be largely proficient in it" (p.1). As a result of this, across Asia, the numbers of people having "at least a functional command of the language have grown exceptionally over the last four decades" (Bolten, 2008, p.2). Due to the rapid sociolinguistic realities of the region, one must be able to communicate in a global language which is understood by many in order to get along in society. For social recognition, acceptance and even for every day general communication purposes, knowing a common language such as English has become a primary

need in Asia. Even to be employed at a suitable position in Sri Lanka today, one needs to be fluent in English communication skills. Having realized this in the 1950's itself, the Sri Lankan government made it a point to teach English at local government schools from Grade 3 onwards (Perera, 2010). Starting at Grade 3 the local government school children learn English for over a decade at schools nonetheless focusing mainly on reading and writing skills rather than on speaking and listening skills. This is mainly due to the exam oriented nature in the education system and as students are molded from childhood to excel at exams only, giving lesser significance to speaking and listening skills. In addition to this, as teachers are equally focused on covering syllabuses and preparing students to face the competitive exams, lesser opportunities are created for the learners to communicate and get used to English language. In addition to this, as students are not made aware about the benefits of learning all 4 skills in English language, they end up being reticent in the language with traits of xynolossophobia and Foreign Language Anxiety (FLA).

Thus, the local education system produces less confident English learners who enter universities as incompetent English language speakers. This leads to lack of English speaking motivation in the English classroom making the students be reticent and reserved in their English, which ultimately results in them being anxiety-driven and taciturn as employees someday. This is identified as the problem of the study. The aim was to identify how entertainment-based Task-Based Activities (TBA) can be effectively incorporated into the classroom context to improve confidence and motivation in undergraduates to speak English.

Methodology: A sample of 32 undergraduates of 1st year, was selected on purposive sampling technique. 15 lessons were prepared based on the knowledge-based objectives of Blooms Taxonomy (1956). The initial 6 lessons were based on the 1st 3 tiers (knowledge, comprehension, application) of the pyramid while the next 9 lessons were based on the next 3 tiers (analysis, synthesis, evaluation). Each lesson had a pre-, during-, and a post-task and all tasks had a diversity. The lessons were different from one another and contained the following:

Pre-tasks contained interesting, diverse, fun, lessons such as video and audio demonstrations, Toastmasters presentations, activities, games, discussions and brainstorming sessions and vocabulary games. In each during-task based lesson there was a variety. Inter-active lessons, group work, poster and power-point presentations, dramas, role-playing, narrative presentations were prioritized. At both pre- and during-task phases, the students were requested to work in groups initially, giving priority to Socio-Cultural Theory by Vygotsky (1978). At the post-task phase, Bruner's Scaffolding theory (1976) was incorporated while offering feed-back, Q and A sessions and constructive criticism s while assisting them to overcome their xenoglossophobia and FLA.

The students were subjected to a pre-Oral Proficiency Interview (OPI) based on their existing speaking skills prior to being engaged in the teaching process. More opportunities were provided in the classroom context for the learners to improve English speaking skills. Initially, the students were made to work in groups and later come forward as autonomous speakers. Following the teaching process of 15 weeks (1 academic semester) the students were again subjected to a post-OPI which contained additional questions than the pre-OPI. The marks were provided based on IELTS standards.

In the study, it describes the "existing phenomena accurately and phenomena that occurred after a certain period of treatment" (Atmowardoyo,2018, p.199). Thus, the study is descriptive in nature as, the single purposively selected group was used under observation, with a careful measurement being done before applying the treatment and then measuring after the exposure.

Analysis and Results: The data was gathered via OPI (Oral test and interview) and observations. The analysis was a mixed approach where quantitative data was analyzed based on excel and SPSS and qualitative data through content analysis. The marks obtained by the sample at the pre-OPI based on IELTS rubric were graded according to the 'Comment Sheet' provided by the University Grants Commission (UGC) of Sri Lanka. According to the grade sheet, the highest was considered to be A+ (marks 85 to 100) and the lowest or failure rate of the test was considered to be D (below 40).

Table 1. The respective grades obtained at the pre- and post-OPI by student in clusters

Grade	Marks	No.of students (Pre-test)	No. of students (Post-test)
A+	(85-100)	-	2
A	(75-84)	-	7
A-	(70-74)	-	8
B+	(65-69)	-	4
B	(60-64)	-	7
B-	(55-59)	-	4
C+	(50-54)	-	-
C	(45-49)	11	-
C-	(40-44)	5	-
D+	(35-39)	2	-
Fail)	35 or below	14	-
	Total	32	32

Accordingly, there is a significant difference in the pre- and post-test marks of each student. The grades obtained by the sample is clustered as shown above. It can be observed that all students have scored below 50% (B-) at the pre-test but, at the post-test, all have scored above 50% (B+). The highest number of students (14) has scored 'D' at the pre-test while the highest number (8) of students have scored 'A-' at the post-test. To identify the statistical difference of the pre- and post-OPI marks, this was further analyzed using the T-test of SPSS.

Table 2 Paired sample statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pre-test OPI Post-test OPI	37.50 67.88	32 32	9.639 9.033	1.704 1.597

Table 3 Paired sample co-relations

	N 32	Correlation	Sig
Pair 1 Pre and Post-test marks	32	.673	.000

The statistics reveal that the mean value in the post-test is higher when compared to the pre-test and that the standard deviation in the post-test stands at 9.033 which is a difference of .606. Paired sample correlations present a significant difference of .000.

Table 4 The paired sample T-test on OPI marks

	Mean	Std.Dev iation	Std.Error Mean	95 % Confidence Internal of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Post-test marks Pre-test marks	30.375	7.568	1.338	27.646	33.104	22.704	31	.000

The paired sample T-test results show a mean value of 30.375. The standard deviation is 7.568 and the 95% confidence interval of the difference is 5.458. The significant 2-tail stands at .000, below the pvalue58 of .05 ($p < .05$ 59 making it be a significant difference.

All students were interviewed and the data was analyzed using the 6 steps method introduced by Braun & Clarke (2006). It was revealed that the students preferred to be taught under a stress-free environment and it enhanced their enthusiasm in learning the subject. It was stated that they developed a special liking towards the language, the environment and the teacher due to the deviation of using these 3 steps method.

Discussion and Conclusion: The findings revealed that the students had improved motivation and confidence to communicate in English language in the classroom context. The less talkative, hesitant speakers showed improved speaking skills and were more willing to communicate with the peers and lecturers. They were more eager to respond to questions, involve in public speaking and presentations, engage in discussions with peers and involve in impromptu speaking activities.

Using diverse lesson plans with specific objectives is a key factor which contributes to boosting confidence and motivation in the students. It seems that following the 3 components of TBL; pre-tasks, during-task and post-tasks, in all lessons also generate much interest in the learner as Ellis (2009) stated. The students seemed to have enjoyed the pre-tasks of the lessons where they were made to engage in brain-storming sessions, interactive roleplaying and dialogues, games, debates, dramas, audio and video presentations, poster presentations, demonstrations by Toastmasters etc. Deviating from the age-old teacher-centered learning techniques, changed classroom environments/set-up in accordance with the multitude of CTBA and the interesting teaching material used by teachers, seem to have made a huge progress in the learners. The improved teacher-student rapport, an outcome of the changed classroom set-up, can be considered a key factor to attract students to learn the language (Nguyen, 2007).

During-tasks revealed that the step-by-step technique of Blooms taxonomy when creating lesson plans, assisted the learners to overcome their xenoglossophobia and anxiety to speak in English language. As the students were made to engage in small groups every day with a

different set of individuals, their hesitation to communicate in front of the classroom was reduced. In time, everyone showed confidence in coming forward and speaking. Initially, the students were provided opportunities to engage in group presentations. However, the number of group members were deducted gradually, allowing the students to groom as individual, autonomous speakers. As they engaged in dramas and role-playing sessions giving priority to their creativity, they enjoyed the TBAs the most. This increased interest to engage in English communication outside classroom.

In accordance with Wijetunge (2016) scaffolding assistance provided in the form of Q and As, individual and peer feedback and contrastive criticism in the post-task phase also assisted the learners to overcome their xenoglossophobia and improve confidence. Results indicate that the students have begun communicating outside the classroom by getting involved willingly in English speaking activities by conversing with other learners and outsiders during diverse occasions in English, participating in English speaking seminars and gatherings etc. corresponding to Guo's (2011) findings. In connection to this, it is revealed that many students have begun taking part in Toastmaster clubs and communicating with foreign cadets. Moreover, the undergraduates even manage to communicate in English outside the classroom in day-to-day matters similar to Guo's (2011) research discoveries.

Simultaneously, students improved several other skills when engaging in these entertainment-based TBAs. Time management skills, leadership skills, public speaking skills and team working skills are a few of them. Thus, it can be concluded that any learner prefers to learn in a student-centered environment where they can freely navigate themselves towards improvement with the assistance of the lecturers as per the Scaffolding theory. When students are made to use their creativity and enjoy themselves while working with peers, with less restrictions and involvement by the teachers, new and diverse learning material, technology-based classrooms with limited number of students, they also improve their social skills as suggested in SCT by Vygotsky.

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Storytelling as a pedagogical strategy in the Human Resource Management (HRM) discipline: Student perceptions

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Abstract: Management undergraduates lack familiarity with the context on which the HRM discipline is established— work, employment, and organizations, as most have never worked in the formal sector. Therefore, there exists a general misconception among undergraduates that subjects from the HRM discipline are challenging to grasp and pass. Also, the pre-specialization part of the Management degree programs including Organizational Behavior (OB) and HRM subjects, are often taught in large classes. Hence, facilitators are challenged with checking the students' level of comprehension and identification of the concepts individually. This has caused many negative effects including lesser number of students selecting HRM as their specialization track. As an intervention to address the aforementioned issues, storytelling strategy was introduced to the subjects in the HRM discipline and the study was conducted to evaluate student's perceptions on the effectiveness of the intervention on overcoming the said issues. In particular, storytelling strategy was introduced to two compulsory HRM courses (OB and HRM, sequentially) in the pre-specialization stage (sample size 500+) and continued with two more optional subjects as the batch progressed to the specialization stage (sample size – 50+). Three types of stories including actual corporate anecdotes, personal work-related stories of the facilitator, and other stories such as folktales were delivered using a hybrid strategy combining digital and traditional methods. At least two stories were shared in one lesson to explain the concepts. Feedback on the intervention was obtained through an online questionnaire distributed to the students who followed at least three of the four courses in which the strategy was implemented. The sample comprised forty-nine students and 98% of the students expressed the view that the stories helped them to comprehend the concepts. Students confirmed that stories enabled them to remember the concepts (93%) and successfully retrieve the knowledge at examinations (92%). Students preferred corporate anecdotes more (51%). Participants also mentioned that not every facilitator can use storytelling effectively, and 94% of the responses indicated that facilitator attributes are instrumental in effective use of storytelling. The participants (33%) also recognized the risk that some facilitators may exploit the storytelling strategy and waste lecture time. Student feedback validated that storytelling could be used in teaching HRM subjects effectively, facilitating contextualization and comprehension. Further research could assess the impact of storytelling on the students' actual performance.

Background: The importance of reflective approach to learning (RAL) in the field of business management has been extensively discussed in literature related to management education, since this discipline basically targets to produce future managers (Griggs et al., 2018; Rothwell & Ghelipter, 2003). The importance of RAL in designing professional HRM programmes has been particularly highlighted by Griggs et al. (2015). Bourner (2003) has explained that reflective learning involves transforming experience into learning. However, lack of work

experience in the formal sector is a major bottleneck that Sri Lankan management undergraduates encounter in learning subjects particularly from the HRM discipline, which challenges their overall learning and understanding of the concepts which are built on a context the students are yet to be exposed to.

This problem is aggravated in the pre-specialization stage of the management degree programmes in which general courses of OB and HRM are taught. Those are large classes with over 200 students, which pose a great challenge to the course facilitators in checking the individual levels of student learning through formative assessment techniques and providing individual feedback to the students to enhance their comprehension of concepts. Above setting has created a misconception among the students that subjects of the HRM discipline are difficult to grasp and pass, and this viewpoint has impacted on the number of students selecting HRM as their specialization track.

As an effort to facilitate the students' ability to clearly clarify and comprehend the concepts in HRM, storytelling was incorporated as a teaching strategy. Further, this strategy was used as a substitute for own experience which the students lack, by sharing stories of others (both known and unknown) with the aim of improving the reflective learning capabilities of the students by relating the narratives presented to the subject content.

Kromka and Goodboy (2018) indicated that "story telling can serve as a memorable learning experience for students" (p.20). They have explained that narratives used in the classroom include personal anecdotes and story-like experiences of others that follow a plot with a beginning, middle and end. Powell and Murray (2012) have speculated that storytelling enables students to visualize them in similar situations as the characters of the story thereby facilitate delivery of the concepts.

The purpose of this study is to evaluate the students' perceptions on the use of storytelling as a pedagogical technique to effectively deliver the concepts in the HRM discipline.

Methodology: Storytelling strategy was introduced sequentially in two compulsory general courses from the HRM discipline: OB (in the second semester of the programme) and HRM (in the third semester of the programme) at the pre-specialization stage where the batch comprised of over 500 students. The strategy was continued with two more optional subjects in the fifth and sixth semesters of the programme, as the batch progressed to the specialization, where the batch size was nearly 50.

In implementing the strategy, the students were exposed to carefully selected stories throughout the semester, where at least two stories were shared in one lesson to explain the concepts. The stories were from three categories: actual corporate anecdotes, personal work-related stories of the facilitator, and other stories such as folktales. They were delivered using a hybrid strategy combining digital and traditional methods. The collection of stories delivered for a selected lesson in each of the four courses is indicated in Table 1.

Table 1: Examples of stories delivered in classes

Course, lesson and the semester	Stories delivered	Technique/s used
OB – Personality (Semester 2)	Story of Jim Twins	Digital storytelling
	Saththi Kumba Jathaka story	Traditional Storytelling
HRM – Succession Planning (Semester 3)	Mr Upali Wijayawardena and Upali Group	Traditional storytelling
	Succession planning by Jack Welsh at General Electrics	Hybrid (Digital and Traditional) story telling
Employee Resourcing – Employee selection (Semester 5)	Clip from the movie "Men of honour" (Diving test)	Digital storytelling
	Clip from the movie "Meet the parents" (Polygraph test)	Digital storytelling
International HRM - National Culture (Semester 6)	Clip from the movie "Mangal Pandey" (Rebelling against use of cartridges greased with lard)	Digital storytelling
	Fall of Walmart in Japan and Germany	Traditional storytelling

Feedback on the intervention was obtained through an online questionnaire, which was distributed to students who followed at least three of the four courses in which the strategy was incorporated. The sample comprised forty-nine students, out of which 61% had followed three courses in which the strategy was implemented, and 39% had followed all four courses. Out of the total respondents 72% were females and 28% were males.

Results: As per the student feedback, 98% of the students mentioned that the stories helped them to create strong reflections about the context, clarify the concepts and improve their comprehension of the concepts. Of the respondents, 96% confirmed that this technique enabled them to identify complex concepts with no trouble. In terms of the effect of storytelling strategy on applying knowledge, students confirmed that stories enabled them to remember the concepts (93%) and successfully retrieve the knowledge at examinations (92%). They (76%) also indicated that there had been instances where they had forgotten certain concepts, however they could retrieve knowledge as they remembered the story linked to it.

In terms of effectiveness of the strategy in beating boredom, 98% of the students mentioned that storytelling made the classroom more interesting, while 90% of the students perceived that this strategy helped to overcome classroom boredom.

In relation to the preference on the type of stories, respondents preferred actual corporate anecdotes more (51%), while the second highest preference was rated to personal work-related stories of the facilitator (41%). Folk stories were rated as the least preferred type of stories.

The feedback analysis also revealed that not every facilitator can use storytelling effectively, and 94% of the responses indicated that facilitator attributes are instrumental in effective use

of storytelling. As per the responses extravert personality, good communication skills and work experience are some of the important personal attributes of the facilitator that contribute to the effective implementation of storytelling strategy in classroom setting. Of the respondents, 33% recognized that this strategy could have the disadvantage of being exploited by the course facilitators resulting in waste of lecture time. Students also reported that storytelling can be a useful pedagogical tool in explaining any type of subject. Of the respondents 90% perceived that the stories have given them the confidence to perform at similar situations when they are professionally employed in the future.

In responding to the open-ended question which examined their opinion on the strategy, some students had mentioned that experiencing and learning through storytelling in the compulsory courses during the pre-specialization motivated them to select the other optional subjects delivered by the same course facilitator using the same strategy.

Discussion and conclusion: Findings revealed that storytelling strategy helped the students to learn subjects from the discipline of HRM, which are built on a context that is not familiar to them. Also, the stories helped them to relate and reflect on the subject content, through the experience of others. The findings confirmed the same reported by Powell and Murray (2012) who highlighted the fact that when complex concepts and theories are presented in story format, it improves student comprehension and grades. Although the study did not assess the relationship between storytelling strategy and student grades, respondents confirmed that the strategy contributed to improve their perceived level of comprehension, ability to identify factual elements of the concepts and convenient retrieval of the knowledge, which are important attributes in determining good grades.

The results also revealed that storytelling strategy helps course facilitators to build better connections with students, by sharing personal stories of the facilitator which is highlighted by Kromka and Goodboy (2018). The open-ended question revealed that the experience of storytelling by the course facilitator in the compulsory courses, motivated the students to take up the optional courses with the same facilitator at the specialization stage. This is also pointed out by Kromka and Goodboy (2018) who speculated that course facilitators who are effective in storytelling are rated by the students as those who create a positive learning environment and such attitude leads the students to perceive that they learn more with teachers possessing this attribute.

Interestingly, the students preferred corporate anecdotes and personal stories of the course facilitator which were unfamiliar narratives to them, over folktales which were already known by them. It indicates that students preferred learning through stories which are directly relevant to the work context, which enable them not only to identify the concept but also reflect on how the concepts are put into application by practitioners in actual work settings.

Time constraint was a challenge in implementing this strategy as the facilitator has to spend a considerable time in compiling stories, and this was more pronounced in adopting digital stories freely available on social media sites such as Youtube and Facebook. However, I have decided to incorporate storytelling as a regular feature in my classes due to its endorsement by the students, as a strategy that helps them with reflecting, clarifying and retrieving the concepts of HRM, which are built on a context that the students have not experienced yet.

The aim of this study was to examine the perceptions of the students on the use of storytelling as a pedagogical technique. Evaluation of the contribution of storytelling strategy on actual student performance is a possible extension of this study that future researchers may consider, which may validate the findings of previous researchers such as Powell and Murray (2012).

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Enhancing learning skills through virtual experience-sharing sessions with industry experts: learner perceptions and performances

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Abstract: Factory visits are a compulsory component of technology modules that are related to the manufacturing of products. However, the students only engaged in online studies during the prevailing pandemic, as country-wide movements were restricted and industries were out of bounds for visitors. Therefore, to fill the gap of exposure to the industry, a virtual platform was opened for students to enhance their learning skills with a mentor selected from the industry. Ten groups, five students in each were formed and an assignment was given instructing each group to find a latex-based products manufacturing industry from which an expert could be selected as a mentor. The mentor shared his knowledge and experiences with students via online discussions and virtual visits to the industry. A minimum of two discussion sessions were conducted by each group and prepared a report according to the guideline provided. Marks were allocated for the report and a *viva-voce* examination. Different types of latex product manufacturing industries have been selected by student groups. The marks obtained for the reports and *viva* were above 67% and the feedback provided by the students revealed that 96% could enhance their practical knowledge. It was experienced that the practical knowledge of the students could be enhanced through this assignment. Interactive sessions between students and industry experts combined with factory visits are very good tools to be applied in practical-related course modules.

Purpose/Background: Latex technology is one module of the National Diploma in Technology program offered for students specializing in polymer technology. This module covers the manufacturing processes of latex-based products such as gloves, bands, foam, toys, etc. Since only the learning of theory is not sufficient to gain a sound knowledge of this module industrial visits have been made a compulsory component. In Bloom's taxonomy, the first three learning levels targeted in students are Remember, Understand and Apply (Practice & Bloom, 2008). Generally, the application of theory in the real context is learned actively by the students with the help of field visits. However, during the prevailing pandemic, the students were unable to visit industries for practical exposure as country-wide movements were restricted and industries were out of bounds for visitors. Therefore, they only engaged in online studies. It is evident that motivated students are always easy to teach, however, motivating students is a great challenge faced by many teachers or educators (Bakhru & Mehta, 2020). In the online mode, motivation is rather difficult than that in a physical classroom. In particular, teaching and learning a more practical-based module such as Latex Technology will not be successful, if the content is received passively with no interactive response or reflection by the student (Felder & Brent, 2004). Considering all these factors, a virtual platform was opened for students through an assignment to fill the gap of exposure to the real-world experience, motivate students toward learning, and enhance students' practical knowledge.

Carefully designed and structured assignment which is completed in a collaborative and interactive learning process is challenging. However, it is useful in encouraging the students to improve their transferable and practical skills by retaining the information in their memory. Collaborative learning refers to two or more students working together on an assignment or project (Felder & Brent, 2004). Also, interactive learning which is facilitated by a mentor motivates students to gain a complete educational experience. The interactive feature plays the key to have an effective and efficient teaching and learning process (Pradono et al., 2013). In this study, students were grouped facilitating collaborative learning and assigned the task to find information on latex product manufacturing technology. An expert from the industry was selected by students as a mentor to share the knowledge on applications and practices related to latex-based product manufacturing via interactive sessions.

Methodology: The latex technology module is evaluated by continuous assessments and a final written exam which comprised 40% and 60% of the total mark respectively. High weightage is given for practical exposure when designing continuous assessments since the module content is mainly based on the technology of product manufacturing. A total of 50 students are enrolled in this module annually and it is conducted in the third semester.

An assignment for which 15% marks of the module evaluation has been allocated of the total was designed to find issues related to latex-based product manufacturing industries. The students were grouped into ten groups with five members in each. All the groups were instructed to find an expert from an industry that produces a latex-based product and to prepare a report according to the guideline provided, after having online discussions with the expert. No groups were allowed to select the same industry as they were advised to select ten different industries.

Six glove manufacturing, two foam manufacturing, and two toy manufacturing industries were selected by the students. A mentor, an expert selected from each industry, supported the group by sharing their experiences through virtual sessions. Students participated in the discussions enthusiastically. A minimum of two discussion sessions were conducted by each group and some groups conducted more than that as per the availability of their mentor. The guideline provided to the students supported them in raising questions and maintaining the flow of the discussion. The following topics and areas shown in Table 1 were included in the guideline for the student reports.

After the report submission a *viva-voce* examination was conducted online group-wise. The reports were marked according to a marking scheme and the *viva* was evaluated as per the rubric shown in Table 2. Finally, the total marks obtained for both were studied. Feedback was also collected from the students by circulating a feedback form that carries seven questions and a space provided for their suggestions. The responses received were analyzed for further improvements in similar assignments in future.

Table 1: Topics and areas covered in the report

Topic	Area covered
Introduction to the factory	Different types of products manufactured Number of each product manufactured per month/ per year The countries to which the products are exported The number of employees in the industry etc….

Manufacturing process	Raw materials used
	    I type of latices
	    ii other ingredients
	Whether dispersions are made or imported/buying them from outside.
	Description of the manufacturing process
	Process flowchart

Issues/problems encountered in	Factory Raw materials Processes (compounding/production/packing). Product
Corrective/preventive actions	Suggested solutions to overcome the issues or problems mentioned above

Table 2: Rubric for evaluation viva

Criteria	Satisfactory (1 mark)	Good (3 marks)	Excellent (5 marks)
1.Knowledge on process steps	Only able to answer the basic questions	Answer the questions without elaborating	Answer with explanations
2.Issues in manufacturing process and remedies	Identified issues but fail to explain the reason	Identified the issue and reason but fail to suggest a remedy	Perfectly identified issue, reason and remedy

Results: Through this assignment, students were able to gather information on well-established latex-based product manufacturing industries in the country and experienced the applications of the theory that they learned. Also, the students could build up communications with the industry experts and develop transferable skills.

The marks gained for the reports and *viva* are shown in Table 3. All groups have obtained a total mark above 67% which indicates that the students have been exposed to and discussed the manufacturing processes and the nature of the industries through this activity.

Table 3: Marks obtained for the report and viva

Group number	1	2	3	4	5	6	7	8	9	10
Marks obtained	75%	68%	74%	82%	68%	76%	91%	84%	79%	85%

The total student number was 49 and 96% of them responded to the feedback form. The analyzed results of the first four questions of the feedback form are shown in Figure 1. All the responded students were satisfied with the experience gained through this assignment, knowledge gained on the nature of industries, practical exposure, and the way of knowledge shared by the industry experts, and 94% of respondents rated their experience gained through this assignment and the knowledge gained on the nature of industries as good, very good, and excellent while 96% and 98% are above satisfaction on the exposure to the practice and the way of sharing the knowledge of their mentor respectively.
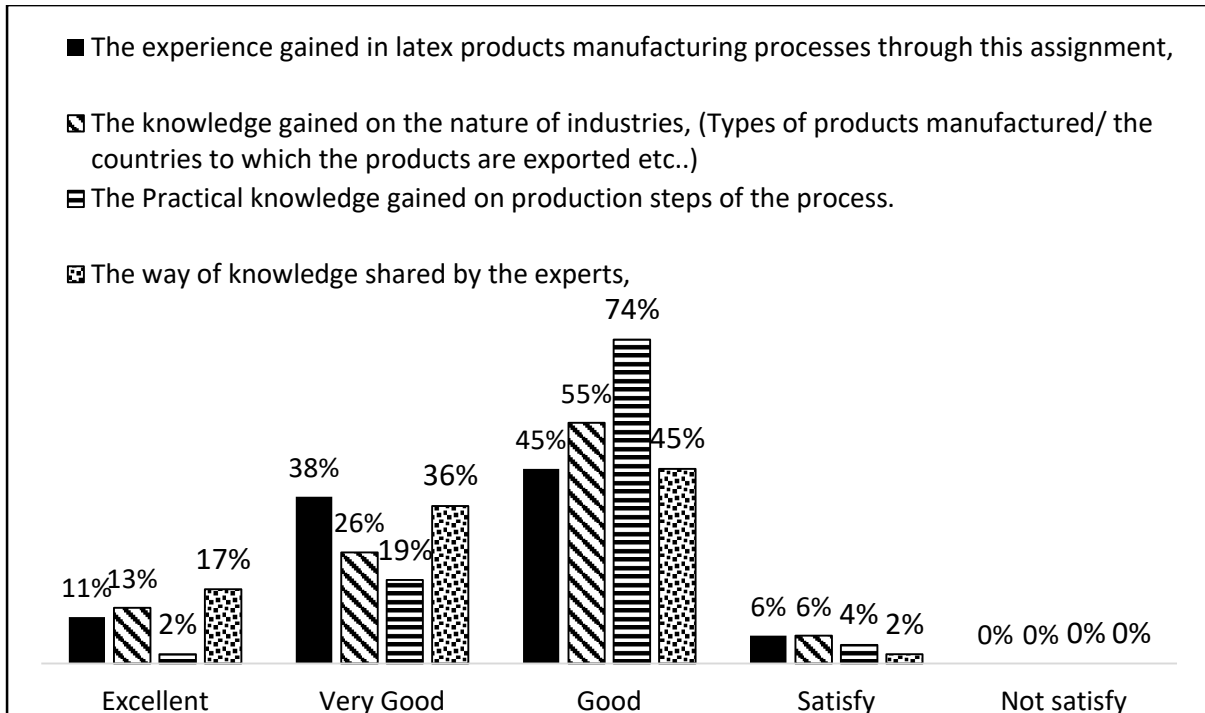
■ The experience gained in latex products manufacturing processes through this assignment,

◨ The knowledge gained on the nature of industries, (Types of products manufactured/ the countries to which the products are exported etc..)

◨ The Practical knowledge gained on production steps of the process.

◨ The way of knowledge shared by the experts,

Figure 1: Analysis of responses for the first four questions in the student feedback form.

The responses to the last three questions have been analyzed and shown in Figure 2. All responded students recommended this assignment for the next group of students. However, only 77% of responded students had confidence in their transferable skills developed through this activity while 19% had uncertainty about it and 4% had not improved their soft skills. Further, 94% of responded students agreed that the knowledge gained from this assignment is helpful/applicable for their academic work while 6% have no clear idea about it.
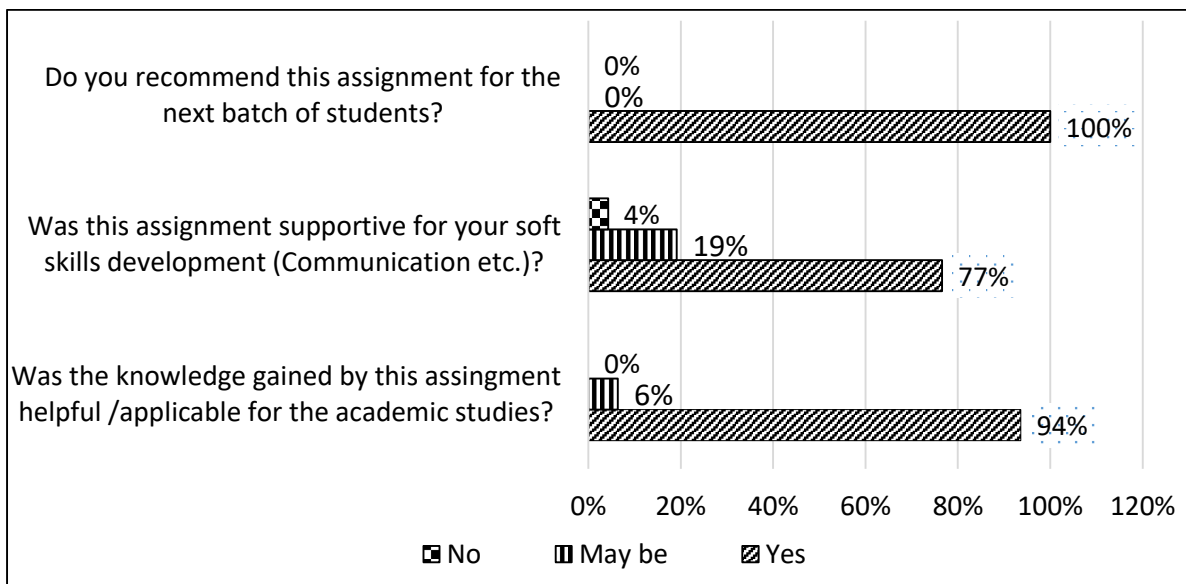
Figure 2: Analysis of responses for the last three questions in the student feedback form.

Further, 30% of responded students' view was if they had an opportunity to visit the factory for at least one discussion-session it would be much more effective while 9% of responded students' suggested to incorporate a presentation session followed by the oral test.

Discussion/Conclusion: The marks obtained and feedback received in this study revealed that the practical knowledge of the students could be enhanced through this assignment. Student's active engagement as a team in accomplishing the given task indicates that they were motivated and trained toward collaborative and interactive learning style. If a group presentation was conducted the soft skills could be developed further and the experiences gather by one group could be shared with the other groups. The students and industry expert's interactive sessions combined with factory visits had been a very good tool to be applied in future to improve the practical experience and knowledge in applications of the students who follow a technology module related to products manufacturing.

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The use of self-evaluation as a tool to enhance students' reflective practice and their confidence in laboratory classrooms

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Abstract: Though the self-evaluation is one of the most powerful tools in improving learning, there are minimum opportunities for students to obtain that in the university due to many reasons. However, it is one of the steps towards self-reflection and lifelong learning. The practice of self-evaluation can develop student thinking and their behavioural pattern that lead to improved metacognition and persistence skills. When directed properly, this also provides warnings of mistakes that need to be avoided in the process towards the result. Therefore, this study was formulated to investigate how students' reflective practice and their confidence can be improved in laboratory classrooms with self- evaluation. Series of self-evaluation activities on the students' work were conducted in the laboratory classrooms of Yarn Manufacture module with 60 Engineering Technology diploma students. Student preparation for the lab class and their learning were evaluated respectively using anonymous questionnaires and self-marking of course work against a given rubric. Finally, a rated questionnaire was given to evaluate students' confidence level on their learning. If any student showed a difficulty in their learning, they were guided to discuss with peers who showed confidence on that area. Laboratory classes were observed during the activity and student feedback was taken at the end of two laboratory classes. More than 95% students agreed that self- evaluation motivated them to achieve the objectives of the laboratory classrooms and identify gaps in their knowledge. More than 80% of the students rated in the questionnaire that their confidence level gradually improved in subsequent lab classes. The teacher observed that students were motivated, and peer teaching and group discussions supported to build a learning community in the classrooms. Self-evaluation can therefore be accommodated in laboratory classrooms to enhance reflective practice and confidence of students and to develop learning communities.

Purpose/Background: Facilitating learning can be more successful if the facilitator can develop the learner eagerness for a deeper elaborative inquiry of the subject matter. To initiate that, a learner needs to be guided to identify what they need to learn, consider a range of contextual factors towards it, and finally, to identify whether they have gained good learning. However, today, university students are more focused on acquisition of knowledge rather than on participation in learning (Boud & Falchikov, 2006). To convert a student to a learner who participate in learning for deeper understanding of the subject, a variety of approaches can be used by facilitators today. Engaging the learner in self-evaluation is one successful approach used in this area. A well-planned self-evaluation mechanism can successfully lift the role of learner from passive to active (Sambell *et al*., 2013). However, in the current university context, there are minimum opportunities for the students to obtain the benefits of self-evaluation. Many students believe that the assessment is a responsibility

of the facilitator which leads to an incongruence of the goals of assessment between the learner and the facilitator. Further, due to lack of assistance form the facilitator the real value of self-assessment is not reaping. (El-Koumy, 2010).

Self-evaluation is defined as 'the participation of learners in judging the outcomes of their learning and their successes in it' (Boud & Falchikov, 1986). Therefore, this is a valuable approach to help learning, mainly in assessing formatively. Further, self-evaluation is one of the most important skills that a university student requires for her future professional development and life-long learning, as it can encourages responsibility and autonomy. When directed properly, this also provides warnings of mistakes that need to be avoided in the process towards the result. In the self-evaluation approach, facilitating and learning are essentially participatory activities which are meaningfully linked together. More importantly, self-evaluation generally takes place within a supportive 'learning community' in which all participants carefully assess the activities that contribute towards learning and transfer the learning when and where necessary. With that, self-evaluation can be formulated towards behaviourism to more cognitive and constructivism approach in learning (Carlile & Jordan, 2005). This can lead to develop students' metacognition and persistence skills (Kallick, 2008).

Designing a process of self-evaluation to promote learning involves many steps. Here, the learner is guided to use a variety of techniques to assess and allocate merit or rate the qualities of their own learning processes and products (Panadero *et al.*, 2016). Also, the learner can establish their own assessment criteria through consultation with the facilitator. Otherwise, the facilitator can provide students with a set self-evaluation criteria. Each requires a learner to reflect on, discuss and negotiate criteria, identify and acknowledge the standard of their work and justify the grade indicating the quality of their work (Taras, 2010).

Finally, reflective practice informs adjustments to processes that deepens learning and enhances learner confidence and performance. Therefore, this study was formulated to investigate how students' reflective practice and their confidence can be improved in laboratory classrooms with self- evaluation.

Methodology: This study was conducted for 60 students who followed Yarn Manufacture module in the second semester of Engineering Technology Diploma. A Series of self-evaluation activities on the students' work were conducted in the laboratory classrooms. Due to the COVID-19 global pandemic situation, the practical work in the laboratory classroom was started after completing all the theoretical work which were conducted in an online platform. During the online education all the lecture notes were circulated, and all the theoretical aspects of the module were discussed. During the laboratory classrooms, student preparation for the practical work with an understanding of the theory was necessary, and that understanding was evaluated in the beginning of the lab class using an anonymous

questionnaire. With this, students' preparation for the practical was assessed. The questionnaire created an opportunity for the students to reflect on their preparation for the practical. Then the practical work started by introducing practical objectives, procedure, discussion points and most importantly how to prepare the course work. Rubric to assess the course work was distributed and discussed. Since the rubric was prepared connecting practical objectives, students were continuously advised to check their alignment with the rubric elements. At the end of each lab session, students were asked to prepare the course work.

Then, students were asked to evaluate and grade their course work against the provided rubric before submitting the course work. This self-marking of course work created an environment for self-evaluation. After each lab session, a rated questionnaire was given to evaluate students' confidence level on their learning. The rating was evaluated through traffic lights system, in which green colour was assigned if students' confidence level on their learning was high and they can share the gained knowledge. Yellow colour is assigned if students needed to clear some part of the practical session. If the students were not confident on the leaning, they were guided to use red colour to indicate that (Andrade, 2019). This rated questionnaire was focused on the learning objectives of the practical session and therefore, it could be used to identify the gaps of student learning. If any student rated with low confidence level in the questionnaire, they were guided to discuss with peers who showed high confidence level in that area. This reflective practice was effectively supported on enhancing students' learning of the concepts and the follow-up knowledge sharing sessions built a learning community in the classroom.

Student feedback was collected after the two laboratory classes through a Likert scale questionnaire. The questionnaire contained three questions on the student motivation on achieving practical objectives, identification of their learning gaps and understanding reflective practice. All the laboratory classes were assessed through facilitator's observation.

Results: According to the anonymous questionnaire on student preparation for the practical session, considerably higher number of students have read their lecture notes in the 2nd day of the practical session compared to the 1st day (refer Table 1). Though students were informed to be prepared by reading the lecture notes before the lab class, it was noticed that a very few students had an understanding of the theoretical parts that are related to the first practical session. However, in the consecutive practical sessions, students' preparation for the practical classes had been improved.

Table 1. Students' preparation for the lab classes

Percentage of the students who,	Day 1	Day 2	Improvement
prepared by reading the lecture notes before the lab classes	8.3%	46.7%	38.3%
have the notes with them during the practical	16.7%	71. 7%	55%

Figure 1 shows a summary of feedback of 60 students on the activity. According to the student feedback, 96% students agreed that self- evaluation motivated them to achieve the practical objectives of the laboratory classrooms. Students agreed that the provided rubric for their self-evaluation of course work helped them to identify their knowledge gaps. Students' comments on the self-evaluation session was very positive and an active participation during the practical was observed during the practical. Most of the students asked questions during the self-evaluation of course works against the provided rubric.
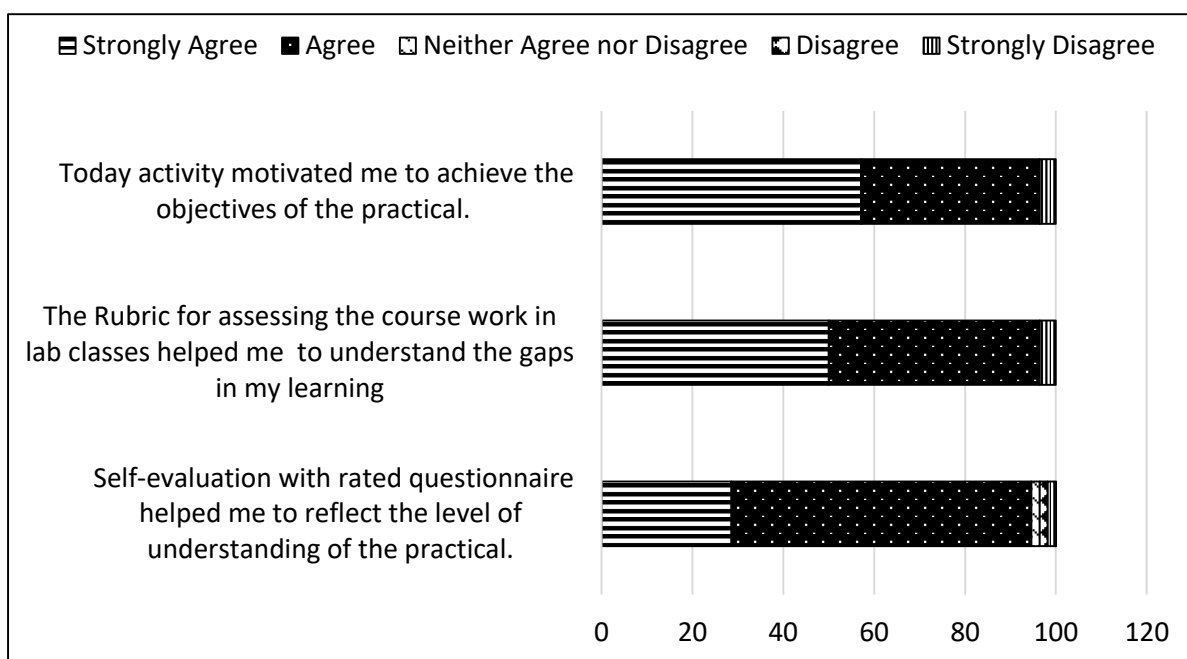
Figure 1. Student feedback on the activities

Progress of the students rating for the questionnaire on their confidence level in consecutive lab classes are shown in table 2. According to that, overall rating of the students' confidence level on their learning was improved by 80.77% in subsequent lab classes while 11.54% students remained in same level. The teacher observed that the students were motivated with the given traffic light system. Peer teaching and group discussions were immerged and improved in subsequence lab classes and supported to build a learning community in the classrooms. It was noticed that the questionnaire on their confidence level was effective, as

it supported students to reflect on their understanding of concepts and identify gaps which also lead to improve metacognition and persistence skills in students.

Table 2. Feedback results on confident level of students

Students' Perceived Confident level in subsequence lab classes	Number of students	Percentage of students
Improved	42	80.77%
Remain same	6	11.54%
Reduced	4	7.69%

Discussion and Conclusion: This study shows that, self-evaluation activities can be accommodated in laboratory classrooms to enhance reflective practice of the students and their confidence level on learning. Reflection on student preparation before the lab class helped to motivate the students to improve preparation in consecutive lab classes. According to the students' perception, self-evaluation of one's learning aided with rubric made them to identify gaps of their learning and encouraged them to correct their mistakes. That enables students to understand reflective practice. Further peer discussion created learning communities and collaborative learning environment in the laboratory classroom.

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#A.5

Application of teaching-learning activities to develop skills on self-preparation in students

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Abstract: Students lack skills on self-preparation as they often come to the class unprepared, mainly due to lack of self-directed learning and not being able to realise its adverse impacts on themselves. Hence, it was undertaken to study how skills on self-preparation can be developed. Once developed, they would contribute to improve the students' performance, both in the personal and professional life. First, eight students of Computing Higher National Diploma Level were motivated by communicating the importance of developing the self-preparation skill. Students were educated on the intended learning outcomes (ILOs) of the Professional Practice module and how ILOs are evaluated, by utilising Bloom's taxonomy. For students to experience self-preparation skill development, in-class Teaching Learning Activities (TLAs) related to SQ4R reading method and Cornell note-taking methods were used. TLAs were implemented so that students carried out preparatory practices of reading appropriate sections and performing TLA related tasks such as note-taking and reviewing. In-class activities were implemented using flipped classroom strategies (discussion-oriented, demonstration-oriented) and feedback was given using the sandwich model. Criterion-referencing was used to evaluate students' activities against the predetermined criteria of ILOs. Out of eight students, 62.5% completed the in-class TLAs. Compared to 100% unprepared students before implementing the TLAs, 37.5% came self-prepared for the subsequent sessions. Questionnaire revealed that 50% of the students perceived clear communication of ILOs along with assessment criteria, use of SQ4R method, flipped classroom strategies and sandwich feedback method as having been beneficial. 37.5% indicated the use of Cornell method, criterion referenced assessment method had contributed to develop their self-preparation skill. Above strategies and methods had been very useful for students to develop their self-directed learning skills that were observed through student activities as well as student perceptions obtained via the questionnaire. It is recommended to continue practicing the said methods and to extend to a larger student number to further validate that improvements take place in students' self-development skill.

Purpose/Background: In higher education teaching, learning and assessments are equally important (Gibbs & Habeshaw, 1992). Therefore, it is critical to identify problems related to the above aspects and investigate solutions for Higher Education to function efficiently and effectively. The problem identified in my students was that they attended the classes unprepared. The main broader cause was the lack of self-directed learning skills and also, perhaps, the unawareness of its adverse impact on their subsequent learning. Preparation for lessons will help students to actively participate in lessons and obtain optimum benefits. Additionally, they can seek clarifications from the lecturer. Further, with lessons that are interconnected and necessary to achieve Higher-Order learning, the preparedness of the students will be essential to maintain a productive teaching-learning process. Not coming prepared will make it stressful specially when the lessons are connected as the students will find it difficult to grasp the developed concepts. Therefore, it is important to develop the skill

of self-preparation in students which could be beneficial in many situations in their personal and professional life, now and later.

As the foundation to find a feasible solution for the problem stated above, Kolb's experiential learning theory (Kolb, 2015) was used. It is described as a dynamic learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction. This process is described as an idealised learning cycle or spiral where the learner "touches all the elements" of experiencing, reflecting, thinking, and acting in a recursive process that is sensitive to the learning situation and what is being learned. Immediate or concrete experiences form the base for observations and reflections. These reflections are assimilated and distilled into abstract concepts from which new implications for action can be drawn. These implications can be actively tested to serve as guides in creating new experiences.

Further, in identifying solutions to the above problem the constructive alignment model (Biggs & Tang, 2011) was used, so that the assessment tasks would become aligned with what is intended to be learned, the topic taught and how it is to be learned. The 'new' Bloom's suggests a wider list of action verbs and knowledge types, especially for a range of learning activities. Bloom's taxonomy is also useful in explaining the intended learning outcomes as it provides a basis for moving curricula and tests toward outcomes that would be classified in the more complex categories (Krathwohl, 2002).

SQ4R (Survey, Question, Read, Reflect, Recite, Review) method is helpful to improve the reading skill and the reasoning ability in students. The mastery of effective reading skills and language are among the most important aspects that will determine whether students will acquire quality education (Khusniyah et al., 2017). The Cornell method of writing helps students to make notes while reading (Donohoo, 2010). Apart from these, flipped classroom strategies allow for an expanded range of learning activities during class time. Using class time for active learning, compared to lectures, provides opportunities for greater teacher-to-student mentoring, peer-to-peer collaboration and cross-disciplinary engagement (DeLozier & Rhodes, 2016). The sandwich feedback model forms one of the most powerful influences on learning and achievement through constructive feedback (Prochazka et al., 2020). Criterion referenced assessment has been used in the process of evaluating (and grading) the learning of students against a set of pre-specified qualities or criteria. I have shown below how these different teaching concepts and methods were applied in this study.

Methodology: I started by communicating the importance and benefits that the students would receive by developing the self-directed learning skill of self-preparation. This was done in order to motivate the students to become interested in spending effort and time for developing the skill. Further, the transferability of the skill had also been communicated to the students. Once this 'preparation' focus was developed, step-wise instructions (as below) were given explaining how to develop the said skill.

1) Communicated the expectation / goal (e.g. activity/recommended reading) based on Intended Learning Outcomes (ILOs)

The ILO was explained to the students. Then, I explained how this ILO will be assessed. Grading rubric has been used in explaining the Pass, Merit and Distinction criteria as shown in Table1.

Table 3 - ILO and evaluation criteria of the ILO

Learning Outcome	Pass	Merit	Distinction
Apply critical reasoning and thinking to a range of problem-solving scenarios	P3 Demonstrate the use of different problem-solving techniques in the design and delivery of an event. P4 Demonstrate that critical reasoning has been applied to a given solution.	M2 Research the use of different problem-solving techniques used in the design and delivery of an event. M3 Justify the use and application of a range of solution methodologies.	D2 Critique the process of applying critical reasoning to a given task/activity or event.

The intention behind this was for students to get an insight on what learning can take place by effective reading. New Bloom's taxonomy was also useful in explaining the keywords in each criterion coming under each Pass, Merit and Distinction criteria which helps students moving from LOTs to HOTs (Biggs and Tang, 2011). Identification of the activities to explain the above was based on reflective learning based on Kolb's experiential learning model (Mcleod, 2017; Kolb, 2015).

2) Guided students on how to come prepared (Going through lecture materials, recommended reading, completing homework etc.)

Based on the recommended reading list I guided students to develop their reading using SQ4R (Survey, Question, Read, Record, Recite and Review) method. Using this method students were able to get an insight on what they read and how to make their reading effective and efficient. Further, this method was adopted to suit an individual's study preferences as well. The method helped retaining the needed factual details while reducing the amount of information that had to be re-learnt and helped them create their study materials to be used in preparing for examinations (*Guides: Study Effectively: Reading Textbooks with SQ4R*, 2021). Additionally, recoding methods such as Cornell method of note-taking was also explained to students which will benefit them in taking down notes while and after reading (Sridharan, 2020).

3) Planned the in-class activities which motivated them developing self-directed learning

Standard inverted flipped classroom technique was used getting the students to read recommended readings, lecture notes or watch videos relevant to their next day class. Discussed such in class time using discussion-oriented flipped classroom technique. Demonstration oriented flipped classroom was used giving the students the opportunity to review materials at their own pace, and as the teacher, I gave the necessary feedback support when needed. Additionally, I formed students into teams and encouraged them to learn from one another. This is known as group based flipped classroom technique. At the end, all lecture notes and recordings were uploaded to the Learning Management System where students had online access to these at any time, as well as via MS Team's platform students can talk to

teachers based on their availability. This method is known as virtual flipped classroom (*7 Unique Flipped Classroom Examples: Which Approach Is Best for You?*, 2019).

4) Assessment and feedback - As feedback given to motivate students to develop further, Criterion referenced assessment with sandwich feedback model were used.

Assessments were done using criterion referencing to ensure assessment validity and marking reliability when there are number of markers (Biggs and Tang, 2011). The students were aware of these marking criteria as they were notified initially. When giving feedback both formative and summative feedback were given constructive feedback where the students can improve further. Sandwich model was used in giving feedback were the feedback started with positives and then action-based criticism and again positives for the student (Prochazka, 2020)

Strategies and methods stated above were applied and the final outcome was observed and recorded. Additionally, student progress too was observed and monitored throughout the implementation process. A Likert scale questionnaire (1 -strongly disagree; 3 -moderately agree; 5 -strongly agree) was given to students to obtain their perceptions on progress and the importance and usefulness in the self-directed learning skill. The questionnaire included questions covering the methods and strategies used in the intervention.

Results: Of the students, 100% mentioned that the learning outcomes were clear and that becoming aware of these learning outcomes guided them to prepare effectively for assignments/activities. It was evident that 40% of the students were well prepared by reading the lecture materials and recommended readings before coming to the class and 40% were 'moderate' and only 20% were less prepared for the lessons. All students agreed that the recommended readings became more helpful for the lesson. After using SQ4R, 40% of the students were able to read important sections relevant to subject topics without lecturer guidance and 40% were moderate in response and only 20% were below the average. 60% of the students were able to make questions and find answers to those when reading and 20% were moderate and rest of the students (20%) were below average. A majority of the students (80%) mentioned that, after following this methodology, searching for answers when reading became more useful when it comes to assignments and class activities and 20% were moderate in response. All students were satisfied with the flipped classroom strategies used and agreed that those were helpful. On the assessment criteria, 60% of the students expressed that their task awareness improved whereas 40% were only moderately aware. 80% were very satisfied with the feedback method used stating it was useful in improving them and 20% were moderately satisfied.

Discussion and Conclusion: KOLB's experiential learning cycle, SQ4R reading method, Cornell method of note taking, flipped classroom strategies, Bloom's taxonomy, criterion referencing and sandwich model of feedback can be mentioned as the main pedagogic tools that were useful in this intervention of improving the self-directed learning skill in students. Implementation would have been easier, more efficient and effective if the session was conducted entirely on physical mode compared to the online mode that was used. However, with the constraints it was successfully implemented and I would next go on to test these methods in larger classes.

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Evaluating the effectiveness of small groups with Belbin's team roles in online learning: Students Perception

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Abstract: Small-group discussions are extensively used in online teaching as an interactive learning strategy. The success of such teamwork depends on team composition. However, assigning learners to small groups has been often random and results in a lack of diversity and expertise in groups. Here, the performance of groups was evaluated during online small-group discussions and possible correlations were studied. The theory related to Magnetostatics was discussed during an online discussion of an undergraduate class of 30 students. The learners were (a) randomly and (b) systematically assigned to six groups, each of five members. Under the systematic approach, the students self-evaluated their ability to solve a specific problem. The systematically assigned groups consisted of at least of two students who could answer the problem. The performance of groups was evaluated by grading their solutions and by recording their interactions in the main discussion. A post-activity survey was conducted to identify the presence/absence of Belbin's team roles in groups. A correlation between the presence/ absence of the Belbin's team roles and the performance of the groups was studied to assess the effectiveness of the intervention. It was identified that the team roles were unevenly distributed among the formulated groups in both random and systematic assignments. The groups with a relatively higher number of missing Belbin's team roles were less responsive in discussions. Furthermore, those teams had a relatively smaller number of respondents/volunteers who were interactive in the main discussion. Belbin's team roles proved effective when deciding the group composition in online discussions. Identifying Belbin's team roles of students beforehand and assigning them to groups while ensuring an even distribution of team roles will therefore provide optimal discussion outcomes.

Purpose/Background: The pandemic-driven shift of the teaching/learning environment from on-site to online in early 2021 demanded techniques to encourage the active involvement of the learners as never before (Bahasoan et al., 2020; Bączek et al., 2021). As such, numerous teaching/learning strategies based on small groups such as brainstorming, buzz groups, fishbowl, syndicates, and group projects came to the attention of the educationalists (Biggs and Tang, 2011). It was evident from the online forums and discussions that the knowledge of educators on such techniques was marginal at least in the local context. Even with the technological advancements, both academics and learners have witnessed and have become a part of the shift to online modes of teaching and learning with considerable backlash. Some concerns behind these repulsions such as uneven internet infrastructure and technology distribution could be comprehended. However, concerns such as lack of interaction, lack of active involvement, and academic dishonesty simply confirm the fact that the inexperienced nature of the educators in effective teaching-learning strategies in the virtual environment has led to this scenario.

The feasibility of employing active learning strategies in online teaching is greatly dependent on the teaching/learning platforms used (Demmans et al., 2020; St-Hilaire et al., 2021). For

example, platforms such as Zoom (Zoom, n.d.) provide a small-group discussion option named breakout rooms whereas other popular platforms do not provide such options. Among many others, small group discussions via breakout rooms have been a popular strategy reported in the recent literature (Gaber et al., 2020; Reinholz et al., 2020). Even though the outcomes of such small group discussions have heavily been reported, critical details pertaining to the formulation of such groups have not been evaluated. In fact, some of the literature suggests that the correlation between the group composition and performance is unclear (Batenburg et al., 2013; McHarg et al., 2012) while some others observe a clear correlation (Aguilar et al., 2019; Henry and Stevens, 1998; Lupuleac et al., 2012; Smith et al., 2012; Torres et al., 2017) in this regard. While assigning learners to groups in a random manner is beneficial in cases such as one-day webinars and workshops, this practice needs further exploration when applying to continuous sessions such as weekly online discussions in undergraduate teaching.

When learners are assigned to a new group during each online discussion, it required time to become familiar with group members and to understand the diversity in the group. This negatively affects the progress of group discussions since the diversity and expertise of a homegroup is not known to its members. This usually results in poor participation in group and class discussions. Furthermore, according to Belbin's management team model (Belbin, 2010), an ideal group should compose of nine individuals who demonstrate facility for a particular team role. He further argued that the nine roles need to be present in a team without duplication (termed a balanced team) for a team to be effective and successful. In this context, the performance of groups was evaluated during small group discussions on "Physics" and possible correlations between performance and group composition were studied.

Methodology: The study was performed in a level III undergraduate physics honours class of 30 students. A compulsory course in the Electromagnetic field that consisted of 45 hours of direct teaching was selected as the course of interest. Theory related to Magnetostatics was discussed in analogy to Electrostatic. A problem-based learning approach was used to promote student-centered learning. The learners were selected to form small groups to discuss and solve problems. Six such discussion groups each with 4-5 students were created and a group leader was appointed to each group. The group leadership was rotated between members (informally). The learners were supposed to remember the group number that they were assigned to and join the same group during the rest of the discussions. The learners were supposed to complete the group activities and present as a group during the class discussion.

Grouping of students was done based on two methods: (a) randomly selected members and (b) systematically selected members. In case (a), students were selected into groups randomly using the options available on the online platform. The platform performs the random assignment via an unspecified randomizing algorithm. In case (b), first, a problem related to the discussion topic was posted to the class. Then, the students who could solve the problem were identified through nonverbal feedback. The groups were formed such that each group consisted of at least two students who could solve the problem. This was achieved by randomly replacing the group members in (a) with the identified individuals to minimize the time associated with the technicalities. The performance of the groups was evaluated by grading the solutions given by each group. Furthermore, their interaction in the main

discussion and small groups were recorded and were given a score on a 5-point scale. A total of five problem-solving sessions were conducted under each category.

A simplified questionnaire was created using Google Forms and made available on the student Learning Management System (LMS) for the students to identify their most appropriate team role. In the simplified criteria, there were 9 descriptions, with one per role. Students could agree or disagree with each description on a 5-point scale. Statistical correlation analysis was performed using Minitab to identify the presence/absence of Belbin's team roles in each group and to relate it to the group performance.

Results: In case (a), 30 students were randomly grouped to form 6 groups each with 5 members. The average results of the group problem-solving activity suggested that 2 groups could not outline an answer to a given problem. The remaining 4 groups outlined the correct answer. Out of those 4 groups, only 1 group demonstrated a group effort with satisfactory involvement of all the members of the group. The work by other groups composed mainly of individual work.

In case (b), 30 students were assigned to 6 groups in a systematic manner as outlined before. Each group consisted of at least two students who could answer a sample question of similar complexity. Figure 1(a) summarizes the average performance of the systematically assigned groups. The Y-axis is the group number. The X-axis is the responsiveness score and the number of respondents. Groups 1, 2, and 3 had the highest score and had 2 respondents. Groups 4, 5, and 6 had relatively lower responsiveness scores with only one respondent.

In the questionnaire deployed to identify the team roles, simple statistical analysis suggested that "Highly agree" response on a 5-point scale had the highest correlation (+0.96) to the presence of Belbin team roles. Therefore, the presence of the Belbin team roles was determined based on the number of "Highly agree" counts for each description. Figure 1(b) summarizes the results derived from the questionnaire and the responsiveness records. Group numbers 4, 5, and 6 had higher missing Belbin team roles (light bar). This is also indicative of the statistical correlation between the "Highly agree" count and the number of team roles. The same set of groups had relatively low responsiveness (dark bar) and fewer responders (medium bar). Statistically, the team roles and the responsiveness had a correlation of +0.77.
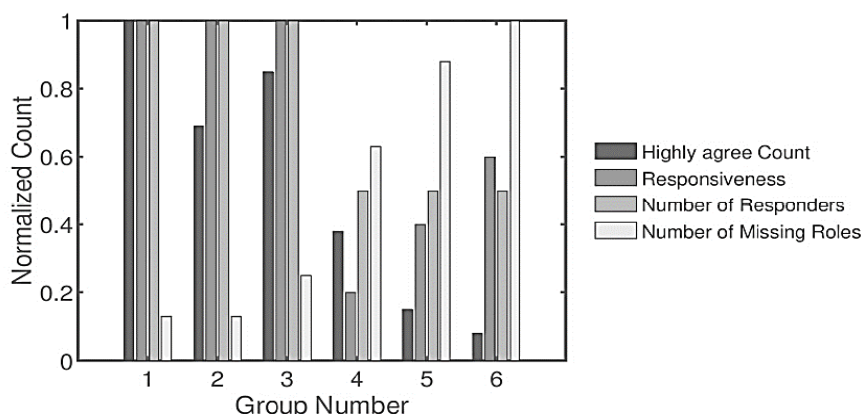

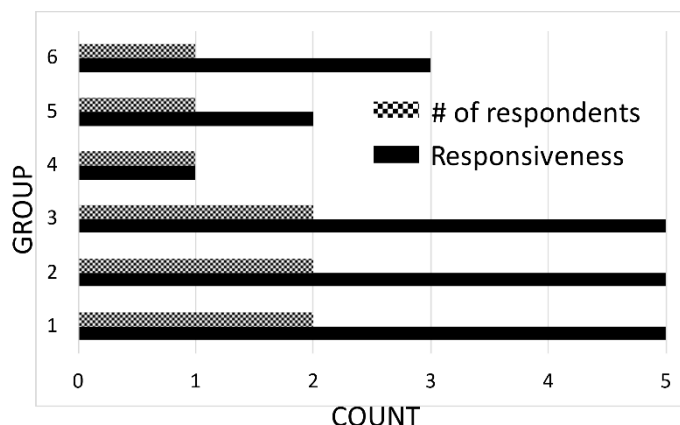Figure 1 (a) A summary of the group performance

Figure 1 (b) a comparison of normalized group composition and responsiveness

Post activity feedback obtained by posting a Google Form survey on the LMS suggested that about 88% of the students were prepared for the discussion by completing the pre-discussion problem sets and by referring to other related materials. More than 90% of the students agreed that they were actively involved in the small group discussion. Furthermore, more than 90% of the students agreed that the session encouraged them to learn collaboratively and was effective, interesting, and motivating. However, more than 90% of the students recommended the small group-based problem solving only for some of the future problem-solving sessions mainly due to the unpredictability of the internet link quality that would hinder effective participation.

Discussion and Conclusion: The results of case (a) suggested that the majority could not perform as a group. Therefore, at least within the limits of this exercise, randomly assigned groups were not effective in successful student-centered problem-solving. The results of the case (b) suggested that even though the groups had the same subject expertise (i.e., at least two students who could answer a sample problem), their performance was not the same. However, the grouping method was effective as all the groups were able to complete the given activities related to problem-solving. Analysis of the student responses and their grades suggested that the team roles were unevenly distributed among the formulated groups. The groups with a relatively higher number of missing Belbin's team roles were less responsive in discussions. Furthermore, those teams had a relatively smaller number of responders (see figure 1 (b)). In summary, the results of the case (b) suggest that the responsiveness/performance of groups increased with an increasing number of Belbin's team roles in each group, in line with similar findings available in the literature (Aguilar et al., 2019; Henry & Stevens, 1998; Lupuleac et al., 2012; Smith et al., 2012; Torres et al., 2017).

In the study, the original questionnaire proposed by Belbin (Belbin, 2010) was modified to form a simplified questionnaire for the students. However, it should be noted that the responses to the simplified questionnaire were not sufficient to identify the team role of an individual student. The responses were only indicative of the absence/presence of team roles through statistical correlation. Furthermore, the current study takes the form of a causation analysis that attempts to correlate the performance of groups and team roles. However, ensuring the presence of team roles in small groups prior to a discussion would result in the most influential small group discussion.

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From onsite to online and MCQs: Reflections on the suitability of changes to increase marking reliability in the assessment methods

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Abstract: This study explored the reflections of examiners with the changes to the final assessments of a theory-based subject—Organization Theory and Design—taught in the second year of the BBA degree programme. Owing to COVID 19 pandemic and restrictions on onsite evaluations, the mode of summative assessments was changed from an on-site essay type closed book examination in 2019 to an online case-based essay type open book examination in 2020, and an open book online MCQ examination in 2021. The examiners observed a significant positive change in the students' final results in 2021, sparking a need for reflection on the suitability of online MCQ examinations for a highly theoretical subject in contrast to essay type questions given on-site and online. We adopted online MCQs for the final examination by including direct, indirect, and scenario/case-based questions. The percentage of the number of students categorized under each marks ranges were compared using graphics in 2019, 2020, and 2021, and the performance level of students for each type of questions were assessed. Further, post-MCQ examination feedback was obtained from the students. Pass-rates accounted for 93.8%, 98.8%, 99.3% (N= 471, 606, 569) in 2019, 2020 and 2021 respectively. The graphics reported fewer deviations amongst the *marks ranges* (in 2021) compared to the previous two years, ensuring reliability in the assessment evaluation (Kurtosis = 0.10, 0.25, -0.80 and Skewness = -0.75, -0.47, -0.12 respectively). In the post-exam feedback, 82.1% students agreed that they performed well and above average and 17.9% felt otherwise. As expected for selected response question types such as MCQs, the comparisons revealed that the subjectivities of examiners encountered in the manual marking were absent in the online MCQs due to the pre-set answers to the questions, which naturally led to ensuring uniformity in the assessment evaluation. The attempt of adopting an online MCQ examination for a highly theoretical subject with both lower and higher-order thinking skills that can be assessed seemed successful with regard to marker reliability.

Background: Assessment plays an integral part in outcomes-based teaching and learning (Biggs & Tang, 2007). The pandemic and its related disruptions required academics around the world to change their conventional mode of assessment to online assessment by adopting a variety of examinations such as online quizzes, multiple-choice questions (MCQs), online essay type questions, writing assignments for both formative and summative assessments (García-Alberti et al., 2021; Muzaffar et al., 2021). These changes, too, affected the assessments of a highly theoretical subject—Organization Theory and Design—that we were teaching at the University of Colombo to the second-year students of the BBA degree programme. This subject was theoretical as it included theories and concepts related to organization, its structure, design, performance, lifecycle, etc. Due to the theoretical nature of the subject and our practice over the years, we had preconceived beliefs that it was only the essay type questions that could assess the expected learning outcomes of this course. In 2019, (in a pre-COVID 19 situation), similar to the past, we had an onsite essay type closed book examination that assessed the students' deep learning skills. However, due to the

pandemic, we were forced to change our summative assessments from closed book to open book, resulting in an open book online examination paper in 2020, where the students were allowed to refer to any materials and *write* descriptive essays type of answers. In 2021, due to several concerns experienced in conducting onsite and online examinations (see details in the Results section), the examination was conducted using online MCQs.

MCQs are a widely used online assessment method (Nundy et al., 2021), especially after the surge of the COVID-19 pandemic. Literature identifies both pros and cons of adopting MCQs as an assessment method. The general perceptions regarding online MCQs are that they are easy to set, inferior to essay types, test lower-order thinking skills, are highly prone to cheating, etc. Merits such as possessing objective marking criteria, automated or electronic marking (for online), having wider coverage of syllabus than essay type questions, ability to test higher-level thinking skills, increased reliability (consistency of a test where examiner's judgments are minimized) and validity (ability to test what intends to be tested) in assessing students' performance (Nundy et al., 2021), impartial evaluation, easily implemented by computer, immediate results and feedback, and suitability for larger groups (Allanson & Notar, 2019) make the MCQs an effective assessment (Brady, 2005). The immediate observation of students' performance with MCQ questions made us see that the failure rate was zero in this examination – which was not typical in essay type summative assessments we have administered over the years. With this observation, we decided to study students' performance and reflect on the suitability of conducting examinations for this theoretical subject using the three different styles in three consecutive years.

Methods: The performance outcomes (marks) obtained by the students in 2019, 2020, and 2021 were compared using descriptive statistics and graphics and presented in percentages. A post-exam feedback regarding the online MCQs were obtained from the students through a Google form.

Results

Reflections–Onsite and online examinations: As mentioned, we conducted onsite closed book examinations in 2019 and online open book examinations in 2020. There were several concerns in assessing answer scripts in both these examinations. First, the open book examination raised concerns about the integrity of the assessment. The examination required students to download the paper from the LMS, write answers within 3 hours, and upload a camera scanned PDF answer scripts to the allocated links in LMS. Since the students attempted the exams from their residences, there were potential issues of plagiarism, cheating, etc., which was difficult to verify. Second, as the examiners, there were concerns about the holistic marking of the answer scripts with the assistance of the analytic marking scheme (Biggs &Tang, 2007). This issue was relevant to both types of examinations. Although the questions expected students to provide 'their own' explanations, we noticed repetition of memorized lecture handouts (in closed book), similarities in the answers (in open book) – as students could have had shared sources through the social/electronic media. These questioned whether the intended learning outcomes were achieved through such types of assessments. Further, we observed that marking answer scripts using an analytical marking scheme could not eliminate these inherent issues.

Third, there were concerns about the subjectivity of the examiners in marking scripts. We observed that it was more severe with open book assessments in 2020. Online answer scripts consisted of camera-scanned scripts (around 600 with varying image quality). The examiners had to read these on computer screens resulting in eye strain from the prolonged screen exposure. This, therefore, could have resulted in subjectivities when evaluating the scripts, even with the analytical marking scheme. Subjectivity in marking could have been due to the tight deadline to complete the paper marking, checking for plagiarism, tracing similar or identical answers for copying and other environmental factors. In addition, due to acceleration in the adoption of online learning and assessment and being the first online examination, the assessment in 2020 limitedly assessed the learning outcomes of the subject. These inherent limitations of the 'conventional' structure of exam questions and the increased subjectivity experienced made us revisit the outcomes of the exam, reflect on our experiences as examiners and explore the alternative of adopting online MCQs assessment in 2021.

Reflections–MCQ examinations: MCQ questions were developed by aligning them with the learning outcomes of the course, testing both the LOTS and HOTS, covering wider areas and topics than the essay type questions, attempting to ensure validity and reliability, minimizing the propensity for cheating, etc. In order to produce quality MCQs, the questions were constructed with Bloom's Taxonomy levels of learning and knowledge dimensions (Anderson et al., 2001) – see Table 1. Constructing good MCQs is a strenuous and time-consuming process than developing essay type questions (Palmer & Devitt, 2007) yet challenging (Allanson & Notar, 2019), and equal considerations should be given to MCQs that are tested in lesser time than the essay type, which is generally tested in three hours. We took nearly two months to develop the initial question banks with 116 questions each and consumed more time for several rounds of alterations. Later they were reduced to 90 questions each, and the duration was set as 2 hours and 15 minutes. As Mate and Weidenhofer (2021) highlighted, we had two pools of questions with equal weightage (covering a wide spectrum of topics, different difficulty and cognitive levels), randomly distributed so that the collusion in the online examination can be minimized. Thus, it was organized that the questions in the pools and the choices within each question were randomized and shown during the attempts, while only the moving forward option was allowed.

Table 1. Description of the types of questions assessed in 2021

Types of questions	Direct Questions (35 Qs)	Indirect Questions (36 Qs)	Scenario/ Case-based Question (19Qs)
Nature of the questions	Testing the 'knowledge' of the theories and concepts	Questions to which student spend more time that tests the higher-order thinking	Cases and scenarios based on real-world examples and substantial time should be spent relating and applying the theories and concepts learned
Nature of the Answers (4 options)	Direct answers from the theories and concepts	Rephrased statements, one word answers, comparing contrasting statements	One word answers, a combination of sets of answers
Equivalent Bloom's Taxonomy level	Remember and Understand (LOTS)	Remember, Understand, Apply, Analyze (LOTS /HOTS)	Apply, Analyze, Evaluate, Critique (HOTS)
Knowledge Dimension	Factual	Factual and Conceptual	Conceptual

Since the formative assessment, i.e. the continuous assessment (CA) for this subject tested predominantly higher-order thinking skills (Bloom's Taxonomy: apply, evaluate, create, critique; Knowledge Dimensions: procedural and metacognitive) and was evaluated based on the pre-developed assessment rubrics, the endeavour of adopting an online MCQs for summative assessment – assessing both lower and higher-order thinking skills (LOTS and HOTS) – did not seem problematic. The MCQs were moderated by a moderator, and revisions were accommodated, including the changes to questions and re-wording some of them to improve clarity. This was followed by a peer-reviewing process of the question banks, and subsequently, as the examiners, we individually had two dry runs before the final examination to check for typos and errors in the choices.

Results: The pass-rates in 2019, 2020 and 2021 accounted for 93.8%, 98.8%, 99.3% (N= 471, 606, 569) respectively. Figure 1(a) illustrates the comparison of the students' performances in 2019, 2020, and 2021. Relatively less deviation is seen in the marks ranges in 2021, ensuring reliability in the online MCQ exam evaluation possibly due to its objective nature, compared to 2019 and 2020, where a holistic grading was awarded. The patterns observed in 2019 and 2020 depict that more students are clustered towards a single marks range, and in 2020, there is a huge difference amongst the marks ranges, which is denoted by the peakedness. This could have occurred due to the subjectivities that occurred in manual marking (Kurtosis = 0.10, 0.25, -0.80 and Skewness = -0.75, -0.47, -0.12 respectively in 2019, 2020, and 2021) as discussed in the previous reflections.
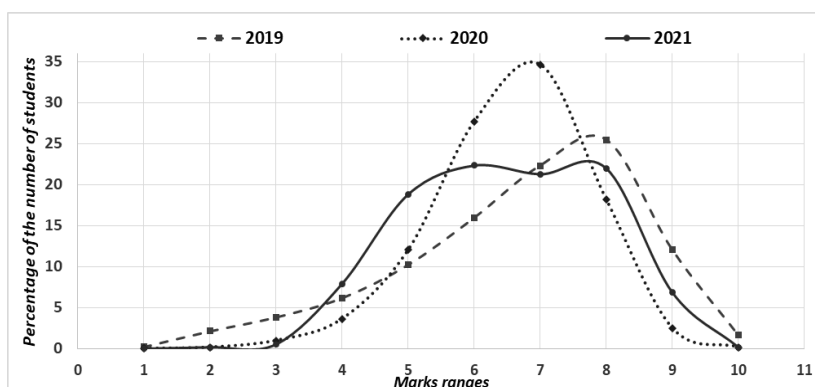

Figure 1(a). Comparison of the students' performances in 2019, 2020, and 2021.
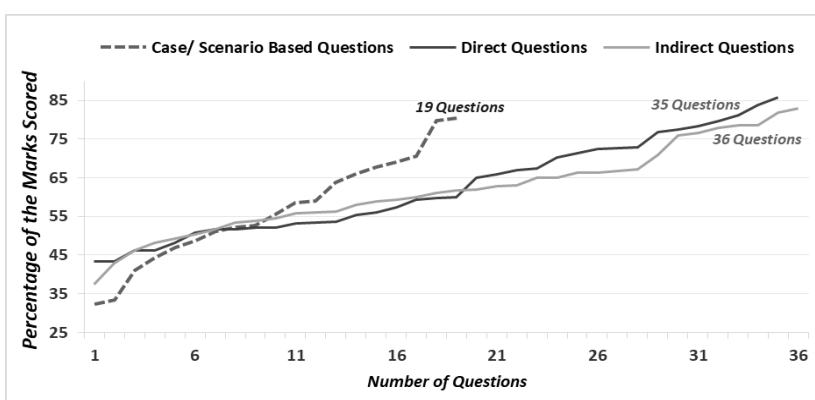

Figure 1(b). Comparison of the performance of the three types of questions

Note. The marks of the summative assessments have been anonymized by coding the marks ranges with Arabic numerals, and only the percentage values of the performance outcomes are presented

With specific reference to the online MCQ exam in 2021, Figure 1(b) illustrates the percentage of average marks scored for each type of question (direct, indirect, and case-based questions). For all three types of questions, the percentage of average marks ranged between 32.3% and 85.8%, indicating the successful attempts in the construction of questions aligning with the Bloom's Taxonomy levels. We felt, though evidence is lacking for some of these, that the basic principles of marking and grading the assessments put forth by Norton (2009) such as consistency, reliability, validity, levelness, transparency, and inclusivity, which ensures objectivity, were achieved in 2021. In addition, the post-exam student feedback on the online MCQs reported that 82.1% students agreed that they performed well and above average and 17.9% felt otherwise and most students perceived that the MCQ option is an acceptable method of summative assessment (80.8%).

Conclusion: We observed a significant positive change in the students' results in 2021 compared to the previous two years, while the post-exam feedback revealed a positive attitude towards the online MCQ examination, which made us reflect on the past and the current practice of summative assessments. Adopting an online MCQ examination for a highly theoretical subject in contrast to essay type questions, be it a closed or open-book exam, or onsite or online exam seems to be a creative, viable alternative. Even on returning to normalcy, given the advanced and improved IT infrastructure in the Faculty of Management and Finance, it seems a practically possible, optimum mode of summative assessment. This form of assessment seems especially important in a context where we experience an increased intake of students every year to ensure accuracy and eliminate subjectivity in the marking process of the evaluation.

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#B.3

Use of video demonstration of water quality instrumentation to familiarize basic instrument handling skill and student's perception of online teaching

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Abstract: Under the circumstances of no more in-person human interaction due to COVID 19 pandemic, getting acclimated to virtual teaching was challenging. The main challenges due to the change was to complete the practical component without compromising the experiential knowledge of students. Instrumentation for Environmental Management course unit comprise of 3 credits; 1 credit for theory and 2 credits for practical which is equaling to 60 practical hours. Under the practical component, sample collection techniques, calibration, accuracy, precision and bias need to be covered to meet the course ILOs. In order to deliver the essence of field/laboratory experience on how these instruments could be used in the field and in the laboratories, a lessons plan was re-designed to teach the practical component on a virtual platform. As an initial step two video clips were composed on handling of two laboratory instruments; pH meter (three minutes) and turbidity meter (2.5 minutes). Student's perception regarding the videos-based learning was evaluated by asking them to fill the feedback forms (10 students). Based on the feedback, a detailed video (about 14 minutes length) was composed by including some additional laboratory/field instruments. Moreover, sampling techniques with narration and highlighting the important facts/information related to instrumentation was also demonstrated in the same video. Along with the video, a quiz (one hour) was given aligning with the ILOs. Student's perception on first two (short) videos were taken in to consideration to make improvements in the detailed video (14 minutes length). The marks earned by students for the quiz was used to evaluate the student's performance. Numbers of students, who have obtained above 80 marks (out of 100) for the given quiz, was set as the benchmark. Eight students out of 10 students obtained above 80 out of 100 and rest of two students had scored closer to 80. Most of the students had scored above the bench mark and it is evident that the knowledge on calibration and handling of instruments has been improved.

Purpose/Background: Instrumentation for Environmental Management is designed for level IV students who are following honours degree in Environment Science. In this course module, two credits out of three are to be completed by 60 practical hours. Under the practical component, sample collection techniques, calibration, accuracy, precision and bias need to be covered to meet the course ILOs. Moreover, lack of knowledge on quality control aspects of using instruments will lead to wrong interpretation of results. The practical component of the course was originally designed to improve the experiential knowledge and to get hands-on experience. However, under the circumstances of no more in-person human interaction due to COVID 19 pandemic, it was forced to getting acclimated to virtual teaching. The main challenges due to the change was to complete the practical component. In order to deliver the essence of filed/laboratory familiarity on how these instruments could be used in the field

and in the laboratories, lessons plan was re-designed to teach practical component on virtual platform.

Methodology: All possible sources/facilities were checked-out to transform from onsite to online teaching. Two video clips were composed on handling of pH meter (2 minutes) and turbidity meter (2.5 minutes). The quality control aspects, calibration requirement, record of reading and storage were demonstrated in the video (Figure 1 and Figure 2).
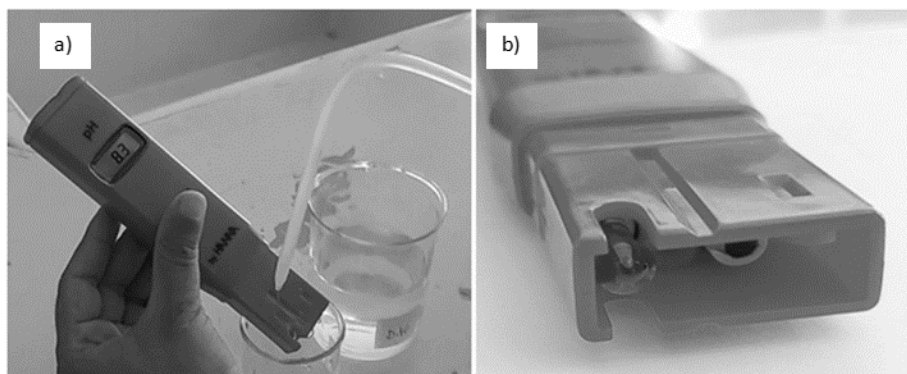

Figure 1: Some snapshots of the video demonstration of pH meter a) Cleansing of the pH meter, b) pH meter probe
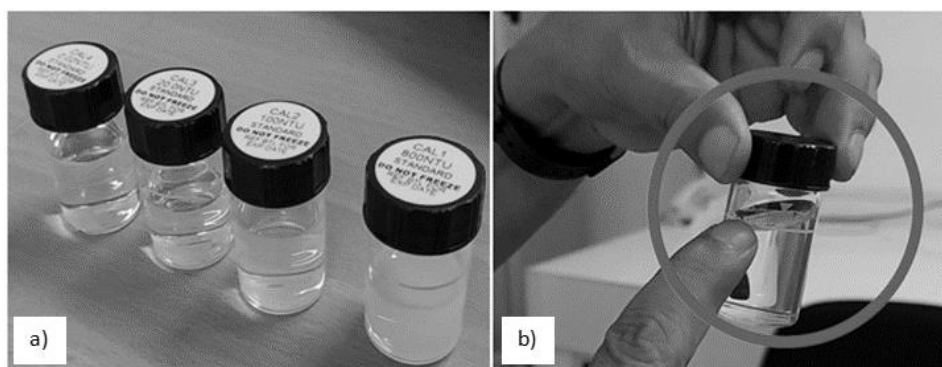
Figure 2: Some snapshots of the video demonstration of pH meter a) Calibration standards; b) Level of indication for solutions to be filled.

The video was uploaded to the LMS and student's perception (ten students) was recorded by feedback forms and student's perception on first two (short) videos were taken in to consideration to make improvements in the detailed video (14 minutes length). A detailed video (about 14 minutes length) was composed including some additional laboratory/filed instruments. Moreover, sampling techniques with narration and highlighting the important facts/information related to instrumentation was also demonstrated in the same video. Along with the video, a quiz (one hour) aligning with one of the ILOs was given. It was expected to students to engage in learning activities that directly address the intended learning outcomes and demonstrate the knowledge in a way that is stipulated in the ILOs. The marks earned by students for the quiz was used to evaluate the student's performance. Numbers of students, who have obtained above 80 marks (out of 100) for the given quiz, was set as the benchmark.

Results

Students perspective on short video demonstrations:

A summary of feedback is given in the Table 1 and one feedback form (completed) with their suggestions is shown in the figure 3.

Table 1: Summary of students' feedback for the two short videos

Description	Students response (n = 10)
Turbidity meter (I was able to understand correct handling of Turbidity meter on following aspects)	
• Calibration with standards	10
• Cleansing the instrument	8
• Correct level of dipping/filling	10
• Record of reading	10
• Safe storage	8
pH meter (I was able to understand correct handling of pH meter on following aspects)	
• Calibration with standards	10
• Cleansing the instrument	9
• Correct level of dipping/filling	10
• Record of reading	10
• Safe storage	8
Video demonstration was useful to understand correct handling of pH meter and Turbidity meter	
• Strongly disagree	-
• Disagree	-
• No opinion	-
• Agree	3
• Strongly agree	7

It was evident that the two videos were effective and useful for them to familiarise on the calibration with standards, correct level of dipping/filling of the instrument and record of the reading. However, cleansing and safe storage of the two instruments need to be improved in the video.

In the feedback form (Figure 3) all students agreed (n=10) that the videos were clear and effective. However, some of them (n=2) were unable to apprehend the content from the video on how to cleanse and safe storage of the instrument.

Further, some of them (n=2) mentioned that they would prefer to shift the course to the 1st semester of the 4th year so that students having lab and field-based research components, can have a better knowledge on instrumentation prior to starting their lab and field work.

Figure 3: Student feedback on two short video clips

Assessing experiential Knowledge align with ILO: Eight students out of 10 students obtained above 80 out of 100 and rest of two students had scored closer to 80 for the essay-based quiz conducted in LMS. The quiz was given in align to address ILO 2: to be able to explain how these instruments could be used in the field and in the laboratories.

Discussion and Conclusion: Most of the ILOs define for the course (Instrumentation for Environmental Management) are to be met by field laboratory practical. However, due to the prevailing condition in the country, laboratory sessions had to re-schedule several times and then postponed until notify. Therefore, students could not attend to field visits or laboratory sessions. It was difficult to find an alternative method to build up the required knowledge other than getting hands on experience. However, within the given set up (lockdown period), use of video demonstration of water quality instrumentation to improve user knowledge was successful as most of the students had scored above the bench mark.

Moreover, the effective use of educational technology would dissolve the boundaries of time and space, allowing many virtual interactions between people, especially during this

pandemic situation. It opens up a new domain for student activity, of which replaying lectures and downloading reading materials, videos etc (Biggs and Tang, 2007). In addition, virtual field visits, composing of demonstration videos, interactive videos, real-time quizzes etc could be effectively used to facilitate students with modern educational technology such as Google earth and zoom.

In fact, comprehensive analysis and critical evaluation need to be done for three deviations undergone for the Instrumentation for Environmental Management course (Figure 4);

- Planned curriculum and taught curriculum
- Planned curriculum and leant curriculum
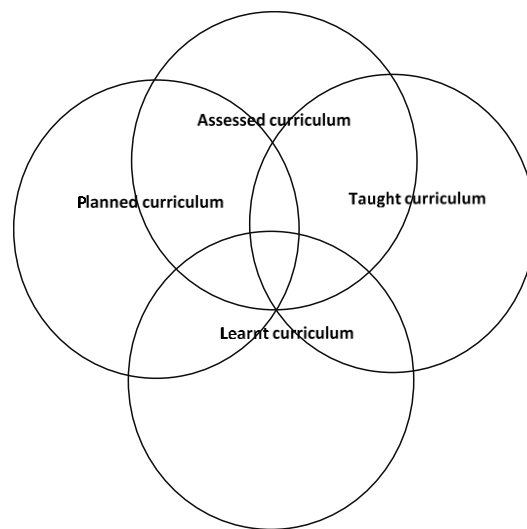- Planned curriculum and assessed curriculum

Figure 4: The planned, taught, assessed and learned curriculum
Adapted from Ballantyne et al., (2017) and modified.

This situation can be justifiable for the taught and learnt curriculum due to pandemic. However, by reflecting on the exercise, it could be suggested that the need of having strategy to assess/evaluate the planned, taught, learnt and assessed curriculum or course (Alsubaiez, 2016; Ballantyne et al., 2017; Harden, 1986).

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#B.4

Use of reflective practice to improve teaching, learning and assessment

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Abstract: Reflective practice is defined as a cognitive process carried out in order to learn from experiences through individual inquiry and collaboration with others and are heavily dependent on self-examination and self-evaluation. This study demonstrates the importance of reflective practice on improving teaching and learning. The intended learning outcome of the course considered here is "to apply the knowledge and practical aspects of different instruments used for environmental management" and the instrument used in this exercise is the (Digital Single-Lens Reflex) (DSLR) camera. In the previous year, basics of the DSLR camera were taught and the assignment was based on the university premises. However, the performance of the students was not up to the expected level. This exercise can be explained based on the Kolb's reflective cycle. When reflecting the reasons for this particular assessment to become unsuccessful (step 1 – concrete experience), it had been due to: lack of availability of DSLR cameras, not many locations and sceneries to capture in the university, lack of guidance etc. (step 2 – reflective observation). Therefore, the service of a professional wildlife photographer was obtained in order to accompany the students to Baddagana Wetland Park with a DSLR camera for each student (step 3 - abstract conceptualization). By reflecting previous drawbacks, the lecture and the assessment were made to be more effective as the work was carried out in Wetland Park, assisted by a professional cameraman (step 4 – active experimentation). When the results of the assessment of the previous year and current year are compared, student feedback on the current year's assessment are far better. Students' enthusiasm on learning to use a DSLR camera was evident from the current year's assessment and feedback. For the previous year, 60% of students stated that the assignment was not effective as the students were lacking DSLR cameras and no proper scenery to be captured at the university. Furthermore, they commented that not having a technically sound person around is a drawback. All the 10 students commented that the new method was a success. The reflective practice supports students and lecturers to be more confident, engaged, responsible and innovative.

Introduction: Hammersley-Fletcher & Orsmond (2005) stated that "The line of thinking that pervades the reflective thinking movement is that if teachers can develop their thinking about their own practice with the aim of changing it according to students' needs, educational transformations would not have to necessarily adhere to some linear predetermined scheme". Reflective practice is defined as a cognitive process carried out in order to learn from experiences through individual inquiry and collaboration with others (Benammar, 2004). In the profession of teaching, reflective practices are heavily dependent on self-examination and self-evaluation and the teacher is supposed to frequently involve in those two in order to improve their professional practices. The reflective practices however needs active participation of the teacher. Further, it was stated that reflection requires attitudes that value one's own and others' personal and intellectual growth and involvement of others (peers and students) which enables teachers to share and learn from experiences and ideas from others' perspectives (Dewey, 1993). Reflection-on-action, on the other hand, is viewed as teachers'

thoughtful consideration and retrospective analysis of their performance in order to gain knowledge from experience (Leitch & Day, 2000). Thus simply, the Reflective practice is 'learning through experience towards gaining new insights of self and practice' (Finlay, 2008).

Background: This study demonstrates the importance of reflective practice on improving teaching and learning. This course unit is designed aimed to gain knowledge and practical aspects of different instruments used for Environmental Management. The intended learning outcome of the course considered in this case the present study is "to apply knowledge and practical aspects of different instruments used for environmental management" and the instrument used in this exercise is the Digital Single-Lens Reflex (DSLR).

In the previous year (2018), basics of the DSLR camera were taught and students were instructed to capture pictures of various places in the University in different modes. However, it was observed that the performance of the students was not up to the expected level. Therefore, reflective practice was applied to the previous years' lecture and practical components to find out the drawbacks and to decide on course to study the possibility of corrective action to be taken improving with in order to the session to be conducted the following year.

Method: The study was carried out with 4th year Environmental Science honours students (n = 10). Last year the basics of DSLR camera was taught and students were asked to go around the university and take pictures in different modes. However, assessment marks revealed (Step 1 – concrete experience) that the output of students were not up to the expected level due to the following reasons:

- Having only one DSLR camera available for all students be used for the activity.
- There were less attractive locations and sceneries available within the university premises,
- Not having a resource person to teach students on creative ways to take photographs using DSLR camera.

These were some of the reasons (Step 2 – reflective observation) for past assessments were unsuccessful. Thus, the following year, this practice was changed by addressing the aforesaid issues through the experienced gained (Step 3 - abstract conceptualization). In this context, a basic knowledge on the DSLR camera was given by the lecturer and subsequently a professional wildlife photographer was invited to accompany with the students to guide them during the activity. An attractive location at Baddagana wetland park was selected to facilitate the photograph taking activity and to motivate the students. Also a DSLR camera was assigned to each student in view of making the assessment more effective (Step 4 – active experimentation). By this change it was intended that each student gets the experience of using a DSLR camera while being guided by a professional in the field in an environment where plenty of opportunities exist for capturing attractive pictures.

Results: When the assessment results of the assessment of the 2018 year and 2019 were compared, student feedback received in 2019 year's assessment was better. Students' enhanced enthusiasm on learning to use a DSLR camera was evident from the 2019 year's assessment and feedback. 60% of students (six out of ten students) stated that the assignment conducted in 2018, was not effective as they did not get the opportunity to use

the DSLR cameras adequately and also due to lack of attractive sceneries were to be captured in the university premises. Furthermore, they commented that unavailability of a technically sound resource person around in 2018 had been the drawback. However, as per the course evaluation all the 10 students commented that in 2019 the they enjoyed and got hands-on experience. Further the assessment marks revealed that practical and the assessment was a success as all the students got better marks than the previous year (Table 1).

Table 4 Assessment marks in percentage for year 2018 and 2019

											Maximum	Average	SD
2018	68	60	63	64	65	65	65	78	63	67	60	65.8	4.8
2019	84	96	80	80	85	83	80	80	85	75	96	82.8	5.6

Conclusion: Maintaining a reflective journal increased the confidence in teaching. Furthermore, reflective practice encourages innovation as the lecturers reflect on their lecture/assessment/practical by realizing what went good/bad and find ways to make it improve or correct. The discussed practical session in photography was a success since reflections were made upon previous year's practical and lecture. Thus, reflective practice improves the quality of teaching, learning and assessment through which, lecturer, as well as the students will be rewarded.

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#B.5

Use of lecture breaks for retaining students' attention in online mode: student perceptions and teacher observation

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Abstract: It was observed that the allocated two-hour period for lectures cannot be used effectively as it is difficult to retain students' attention, especially in online mode. This problem was encountered, especially when the course unit "Population Theories", which is fully based on theoretical concepts and involves more readings and explanations than analysis. It was observed that most students did not respond to any questions or did not give any comments 20–30 minutes after the commencement of the lecture. Majority of students depended on the lecture recording rather than listening to the online lecture and taking notes. The lecture breaks technique has been used as the theoretical base in the present study. This study was conducted for the second-year students (N= 51) who followed the 'Population Theories' course in 2021. This was implemented during a two-hour lecture, by giving few simple problems for the students to solve and by posting a question to discuss with a peer for five minutes, via Zoom break-out rooms. Two lecture breaks were included for the whole lecture with a maximum duration of 8 minutes per each break. Outcomes have been evaluated through self-observation and student feedback. After the implementation, nearly 92 per cent stated that this modification was very effective for their learning. More than 95 per cent were of the view that the lecture breaks provided more learning opportunities, and 96 per cent mentioned that it helped them to retain their attention continuously in online lectures. As a self-reflection, it helped the lecturer to conduct the lecture effectively and it helped students to continuously keep in touch with the lecture on a virtual platform. The results suggest that the lecture breaks technique can be used to improve online learning effectively during the allocated lecture time and this method enables more learning opportunities and active participation in the virtual environment.

Background: Sri Lanka as a developing country, with the transition of onsite teaching to online teaching, both teacher and student have faced several challenges such as lack of infrastructure, issues with transmission of signals, lack of knowledge on information technology and specifically poor practices adopted in online teaching and learning (Hayashi *et al*., 2020). These challenges resulted in different issues such as difficulty in delivering online lectures, lack of students' participation in the teaching-learning process, difficulty in completing the course syllabi within the allocated time duration, difficulty in getting adapted to the online methods etc.

As a lecturer in the field of Social Sciences, many such issues were encountered due to the online transition of teaching and learning. It was observed that the allocated online two-hour period for lectures cannot be used effectively for teaching as it was difficult to retain students' attention. According to Gibbs and Habeshaw (1989), students' attention will reduce 15 minutes after the beginning of the lecture. Further they stated that the students' physiological level of arousal will be lower after fifteen minutes and their notes will be less accurate than

what they took down early. This results in only a smaller proportion of the main ideas of the lecture being incorporated in the notes after their attention has been decreased.

As a self-reflection, with the current online semester schedule and the time allocated for the lecture (2.00 pm to 4.00 pm), it was observed that students were not paying their full attention to lectures, which reduces their subject-based knowledge. This problem came up, especially in the delivery of the course unit of "Population Theories", which is fully based on theoretical concepts and contains more readings and explanations than calculations and analysis. It was realized via student's' comments that most students were very uncomfortable, and were not showing any signs of activity or attention after 20–30 minutes of commencement of the online lecture. It was evident that Most students stopped taking notes and tried to depend on the lecture recording rather than listening to the online lecture. Hence, in order to deliver an active online lecture and to provide with a comfortable learning environment for students, the lecture break technique has been used.

According to Gibbs & Habeshaw (1992) most people's attention span is somewhere between 15 to 20 minutes. At best, therefore, students can only be expected to be paying attention within the first 20 to 30 minutes of the lecture. If the lecture continues without taking this into consideration, the effectiveness of the same becomes very poor, hampering its functional quality. Therefore, lecture breaks can be better utilized for the students to get involved in active learning during the lecture. Lecture breaks are important not only for counteracting decreased attention, but also to provide a great opportunity for students to engage in a learning activity (Bunce *et al.*, 2010). Furthermore, it is easier for students to stay focused if the online lecture is incorporated with activities (Wong, 2001).

Methodology: This study was implemented for the second-year students (N= 51) who followed "DMG 2129: Population Theories" course unit in Sinhala and English medium in the year 2021, semester I. Before implementation, the students were informed regarding this new change and how it will be useful to them. Two lecture breaks were included for the whole two-hour lecture with a maximum duration of 8 minutes per break. Few simple problems were given for the students to solve and a question was posed in order to discuss it with a peer for five minutes, via Zoom break-out rooms. Several questions were included in the presentation as shown in Figure 1, to be posed during the lecture breaks with the purpose of keeping students' attention continuously.
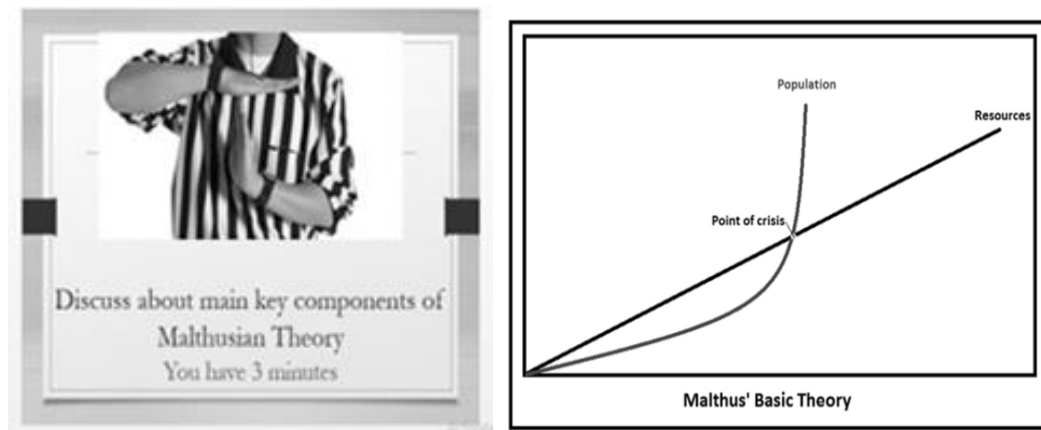

Figure 1. Questions posed during lecture breaks

Firstly, a three-minute activity was given after the first 30 minutes of a two-hour session. The second break was given 30 minutes after the second hour. Subsequently, outcomes were evaluated through self-observations and student feedback. Student feedback was collected through a self-administrated google questionnaire.

Results: It was revealed that students' continuous attention on learning can be maintained by using lecture breaks in online mode. It was observed that students pay more attention to their subject matter and the lecture breaks also give them the opportunity to clarify any issues before proceeding to the next step of the lecture.

The first lecture break which was initially planned for 8-minutes took more than ten minutes to complete. This issue was overcome in the second lecture break by tracking time on the tasks conducted during the lecture break which enabled the same to be finished on time.

Before implementing the lecture break technique, most of the students were not aware of a lecture break and how it works. However, after explained it to them, they were aware regarding lecture break and how much it could be useful to them. Table 1, shows that, all students are of the view that the lecture breaks were very effective for their learning in the online mode. More than 96 per cent of the students stated that the lecture break technique provided more learning opportunities for them.

Table 1. Student feedback on implementation of the lecture breaks (n= 51)

Statements	Agree (%)	Quite agree (%)	Quite disagree (%)	Disagree (%)	Total (%)
I think lecture break method was very effective for my learning.	92.15	7.85	0.00	0.00	100
This method provided more learning opportunities for us.	86.27	9.80	3.93	0.00	100
This method helped me to retain my attention continuously in online lectures.	84.31	11.76	3.93	0.00	100
I need more time for each lecture break.	45.09	13.72	21.56	19.63	100

Especially, 96 per cent mentioned that it helped them to retain their attention continuously in online lectures. Furthermore, nearly 59 per cent stated that they need more time for each lecture break in the online mode than the given time in implementation. On the other hand, nearly 40 per cent of students stated that they do not need more time to each lecture break than the given time within the online mode.

Furthermore, it was observed that students were actively taking lecture notes while listening to the lectures rather than trying to depend on Zoom recordings. Hence, it is evident that this approach can be applied to all online course units to keep students' continuous attention and to enhance their learning.

Discussion and Conclusion: The results of the study show that the lecture break technique can be used to enhance the effectiveness of teaching and learning in online mode.

This technique facilitates enhancing students' active learning while maintaining continuous attention in an online platform. This can be particularly useful for both teachers and students

in the social sciences and humanities stream, which is fully based on theoretical concepts, involving more readings and explanations than analysis. Due to the overall usefulness of this lecture break method that I had earlier used for my Face-to-Face teaching, I am now planning to use it for all my online teaching too.

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