

# National Action Research Conference on Higher Education - 2021

**DISCOVER AND DISSEMINATE : BEST PRACTICES IN HIGHER EDUCATION** 

# **Conference Proceedings**

Faculty of Humanities and Social Sciences University of Sri Jayewardenepura, Sri Lanka.

## Proceedings of the 1<sup>st</sup> National Action Research Conference on Higher Education

## NARCHE 2021 Virtual Conference

"Discover and Disseminate: Best Practices in Higher Education"

16<sup>th</sup> September 2021

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## **INTRODUCTORY REMARKS AND ACKNOWLEDGEMENTS**

On behalf of the organizing committee, we warmly welcome all the invitees, presenters and participants to the first National Action Research Conference on Higher Education (NARCHE) 2021 organized by the Faculty of Humanities and Social Sciences (FHSS), University of Sri Jayewardenepura.

The need for an action research conference emerged in the year 2019 when the curriculum of the FHSS was revised under the leadership of the Dean of the Faculty of Humanities and Social Sciences, Prof. Shirantha Heenkenda. The primary purpose of the conference, according to Prof. Prasad Sethunga, the consultant to the curriculum review process, was to examine the effectiveness of the newly introduced teaching, learning and assessment methods and techniques incorporated into the new curriculum. However, going beyond this primary purpose, the Faculty decided to pioneer and create a wider forum for action research findings in the country and proposed a National Action Research Conference on Higher Education (NARCHE), the first ever conference of its kind in Sri Lanka.

As action research was a novel concept, a series of workshops on 'Action Research' was organized by the NARCHE conference committee under the guidance of the Dean, FHSS, Prof. Shirantha Heenkenda, Prof. Prasad Sethunga of the Department of Education, Peradeniya University, Sri Lanka and Dr. Bimali Indrarathna of the Department of Education, University of York, United Kingdom. A number of academics from various higher education institutes in Sri Lanka took part in the workshops organized by the FHSS and broadened their knowledge on action research methodology in education.

The theme of the first NARCHE is Discover and Disseminate: Best Practices in Higher Education. At a time when the world is confronted with new challenges in teaching, learning and assessment due to Covid 19 global pandemic, this year's theme is apt and timely. It is necessary to discover equally effective alternatives and protocols for distance learning, online or otherwise, and share such best practices with the academic community in higher education. Teachers, students, parents, and all stakeholders are expected to respond proactively to the needs of the time by transforming changes and challenges into opportunities that will provide quality education during this uncertain period. We hope that the conference will be a rich venue for the academics to share their innovative discoveries related to teaching, learning and assessment practices in higher education. NARCHE 2021 would not have been possible without the support of many individuals. First of all, we thank all the authors from different higher education institutes for submitting their extended abstracts to NARCHE 2021, and all the reviewers for their support during the review process. Next, we wish to express our sincere thanks to the keynote speaker and plenary speaker for agreeing to share their expertise with the NARCHE 2021 audience. Also, we are thankful to Prof. Prasad Sethunga, the research adviser to the conference for his guidance, collaboration and support from the very beginning of the conference. We also thank the session chairs, convenors, members of the editorial board and the technical team of the Centre for Digital Education and Professional Development (CDEPD) headed by Prof. Damayanthi for their contribution to make the conference a success. We wish to express our sincere thanks to the Vice Chancellor, the Dean, Faculty of Humanities and Social Sciences, the Registrar, the Bursar and all members of staff of the University of Sri Jayewardenepura for their support to make NARCHE 2021 a success. Finally, we thank all the members of the organizing committee for their continued commitment. We hope that more and more action research studies will be conducted in higher education sector and the Faculty of Humanities and Social Sciences of the University of Sri Jayewardenepura will remain as the pioneer in creating a platform for such action research findings in the future.

We wish you a productive and inspirational conference.

Dr. Sampath Pushpakumara

**Conference** Chair

**Dr. Himalika Ranaweera** Conference Secretary

## **MESSAGE OF THE VICE-CHANCELLOR**

It is with great pleasure that I, as the Vice Chancellor of the University, extend my sincere congratulations to the participants attending the first ever National Action Research Conference on Higher Education (NARCHE) organized by the Faculty of Humanities and Social Sciences of the University of Sri Jayewardenepura.

The University of Sri Jayewardenepura, since its inception, has been committed to the professional development of its academics. National Action Research Conference is yet another forum for critical debate of research and innovation in teaching, learning and assessment practices in higher education. Action research enables academics not only to practice but also improve the situation under which the practice is done and it is vital in ensuring a change in educational practices. This change in higher education has become important today more than ever because the challenges faced by higher education today are so grave that there is a dire need to seek innovative ways to disseminate knowledge and enhance skills and attitudes of the learners. Action research certainly helps us improve the quality of the learning environment and it is scientific and systematic, involving inquiry and continuous professional development. NARCHE 2021 is indeed an important and timely event that will allow the practitioners of higher education to share their good practices and keep up with new innovative teaching, learning and assessment methods.

I wish to express my sincere appreciation to all committee members of the conference, including the Dean of the Faculty of Humanities and Social Sciences who initiated and gave leadership to the conference. Finally, I wish that NARCHE 2021 will be an effective, memorable and productive conference.

#### Senior Professor Sudantha Liyanage

BSc (Hons) (USJ), PhD (Cardiff), C Chem, FRSC, FIChem C, FPRISL Vice Chancellor, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.

## **MESSAGE OF THE DEAN**

It is with great pleasure I send this message to the first ever National Action Research Conference on Higher Education (NARCHE) 2021 organized by the Faculty of Humanities and Social Sciences (FHSS) of the University of Sri Jayewardenepura. The very idea of an action research conference emerged when the curriculum of the FHSS was revised in the year 2019, and a need arose to see how far the new methods, techniques and methodologies introduced to enhance the quality of teaching, learning and assessment are appropriate, successful and popular among the undergraduates of the FHSS.

In spite of the challenges faced due to global Covid 19 pandemic, the Faculty was able to continue its teaching, learning and assessment. It was inevitable that new protocols for distance learning, online or otherwise, required the university teachers to rapidly change their practices, including daily tasks, responsibilities and accountabilities. Also, they were compelled to develop new alternative and varied approaches to monitor students' learning during the Covid crisis.

Effective teaching is a continual learning process that requires endless accommodations, innovations, and problem solving. It is seldom when one "right answer" works in all situations or provides a fully realized solution. This is where research becomes important. Research examining the effectiveness of teaching, learning and assessment methods plays a vital role in the modern fast changing technology-based education today.

Action research is particularly significant in a situation where things are not running as expected and there is a need for a change of strategy. Practical solutions might be very much needed in such cases. Action research helps the university teachers to understand the situation deeply and find the most practical solution to it. It involves a teachers' research into their own actions and possible actions to be undertaken in order to improve the same.

Moreover, action research gives insight into the past situation, the present as well as the future projections concerning the situation at hand. I am assured that the lessons learnt from new teaching, learning and assessment approaches during the Covid pandemic and before that will be discussed and shared during the technical sessions of the NARCHE 2021 thus making the conference a timely event. Finally, I wish to express my sincere thanks to the organizing committee and extend my congratulations to all the participants attending the NARCHE 2021. I hope that the NARCHE 2021 will be a great success.

#### Prof. Shirantha Heenkenda

BA (Hons) (USJ), PGD in Statistics (USJ), MSSC (Kelaniya), MA (GRIPS-Tokyo), PhD (Nagoya) Dean, Faculty of Humanities and Social Sciences, University of Sri Jayewardenepura, Sri Lanka.

### **MESSAGE OF THE CONFERENCE ADVISOR**

Act on Evidence...

My heartfelt congratulations to the Dean of the Faculty of Humanities and Social Sciences (FHSS) of the University of Sri Jayewardenepura, Prof. Shirantha Heenkenda and the Conference Chair Mr. Sampath Pushpakumara and his team for their collaborative effort to hold a National Action Research Conference in Higher Education (NARCHE) for the first time in the university system in Sri Lanka.

I would like to extend my warm welcome to all the participants who will join to present their reflections based on their Action Research (AR) studies in teaching and learning. Action research process is a systematic journey carried out through reflections on our own practice. Originally action research was limited to general education and teacher education but now it has been practiced at all levels of formal education including higher education.

"Discover and Disseminate the Best Practices in Higher Education" is the theme for NARCHE 2021. During the period of curriculum revision and development process of the FHSS, which was initiated in the year 2019 the faculties explored the strengths and weaknesses of the curriculum and the teaching learning process. The faculties further emphasized that the reflections of the teacher student interactions and other artifacts in the teaching learning process should be considered in terms of modifications and progressive changes of the curriculum while focusing on students in higher education.

NARCHE is a brainchild of the FHSS of the University of Sri Jayewardenepura and it opens up the opportunity for researchers to share the reflections based on their actions and interventions that have been taken in order to attain their intended learning outcomes through an evidence-based approach. NARCHE also gives an opportunity to the university academics and teacher educators to share the suitable Teaching Learning Activities (TLAs) and Assessment Tasks (ATs) specifically in higher education and expand their networking beyond their own specific field.

I would like to take this opportunity to express my sincere gratitude to the reviewers, conference secretary and all the committee members for their dedicated contributions and tireless support to make this conference a success.

#### **Prof. Prasad Sethunga**

Department of Education Faculty of Arts, University of Peradeniya

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## **KEYNOTE SPEECH**

## **KEYNOTE SPEECH**

## Reflection and reflexivity for 'practice-changing practice': Enhancing teaching & learning in higher education

#### Associate Prof. Indika Liyanage School of Education, Deakin University, Australia

Action research (AR) offers "a strong conceptual, theoretical, and practice and evidence-based foundation" (Harvey & Jones, 2021, p. 173) for research in response to current circumstances confronting teaching and learning in higher education (HE). To begin, there is the intensifying quest for improvements in quality in HE teaching practice, a quest driven not just by the enduring professionalism of teaching academics but also by various stakeholders – government and institutional policies, employers, students - in very competitive local and international environments. This has prompted a growing body of theorization and research in the field of teacher professional development and learning. Add to this, the pandemic has (i) disrupted traditional models of teaching and learning in HE, and (ii) focused attention on how HE has been adjusting to meet the needs of students, both as learners and as graduates, in an era already characterized by change - mobility, digital communication, and new ways of working. The impact of the pandemic on how HE is 'done' is a problem that undoubtedly confronts individual practitioners in delivery of their teaching programs, but one that really requires collaborative and policy-level attention, responses and support. In going forward, we need to engage with these complex situations as opportunities for innovation, research, and learning. Innovative approaches need to be subjected to critical scrutiny, and this means reflective practice that is reflexive and integrated in rigorous data-based research conducted by individuals, groups of colleagues, institutions, and even between institutions internationally. This will allow evidence-based evaluation of innovations and of research methodologies, advance professional learning and development of academics in HE as both teachers and researchers, as well provide the foundations for institutional learning and change.

#### Focus and Perceptions

The question I address in this paper is 'Why is the practice of action research (AR) an ideal strategy for responding to these priorities facing higher education (HE)?". In doing so, I begin by acknowledging that academic opinion regarding AR as a research strategy is mixed. Action research has a considerable history and there are many who champion it (e.g., see Norton, 2019; Zuber-Skerritt, Fletcher, & Kearney, 2015). Despite this, there are numerous criticisms levelled at AR of being an "unscientific" (Arnold & Norton, 2018) research strategy, and of the applications of it and the knowledge produced. Even advocates of AR point to shortcomings in the rigor and reliability of reported AR, and its confinement to local settings. In their review of AR

in HE, Gibbs et al. (2017, p. 6) observe that this is particularly so in the use of AR to evaluate pedagogical innovations:

How AR is utilized as a research method – how data are collected and analyzed, how positionality and bias are negotiated, and how the AR spiral/cycle is enacted, and so on – often goes unexplored, leaving open any questions on rigor and reliability of the findings. AR often appears to be used as a tool to encourage critical reflection rather than to be reflexive ..., and to increase professional efficacy in such instances rather than to serve as a research method.

These perceptions of the failings of some AR need to be addressed, and in its defense we can look to advocates of AR, such as Zuber-Skerritt (2015) who has provided strong cases for the conceptual foundations and integrity of AR as a model of learning in HE. Nonetheless, many in the HE sector accord a lesser status to AR, and this discourages higher educators, especially those outside the field of education, from engaging in research focused on their own teaching and learning. Complicating this reluctance is the priority most institutions give to academics generating research and publication outputs focused on their particular field, which means research attention to teaching and learning is marginalized in favor of directing limited time and energies to discipline-focused work (Harvey & Jones, 2021). I argue strongly for recognition that AR applied to the scholarship of teaching and learning can make a vital disciplinary contribution – high quality teaching that attracts and engages students builds the strength of disciplines as professions and nurtures future researchers. Rather than prioritizing only discipline-focused research, universities should aim to encourage and value AR, and consider institutionalizing it to investigate teaching and learning policies, approaches, and practices as a form of educational research central to two dimensions of the mission of HE - teaching and research. Developing structures and processes that shift AR from the margins to embed it as fundamental in ethical institutional practices can facilitate the task key of achieving the quality in both teaching and research that is today considered an essential dimension of organizational success, one that has always been the motivation for the conduct of AR - "change through critical scrutiny of self, society, and structures" (Walker & Loots, 2018, p. 167).

#### **Challenging the Assumptions**

Moving the horizon of AR outside a mundane use as a tool for evaluation of a teaching innovation or an assessment practice, or as model for professional development, requires an approach that raises questions that "change and challenge the assumptions that underpin practice" (Arnold & Norton, 2018). Rather than working within the confines of the status quo, AR needs to interrogate and contest the discourses and ideologies that construct not just practice but the context of practice. AR offers a process for professional teacher learning, but in that process must be embedded not only scrutiny of assumptions about teacher learning, but recognition that questioning and understanding such assumptions is an indispensable dimension of learning. Likewise, learning about changing practice/s necessitates questioning assumptions about what teaching practice is, and what it aims to achieve. Here it is worth reminding ourselves of the value of the well-known educational AR practice of collaboration with a critical friend (MacPhail, Tannehill, & Ataman, 2021), which can lead to revelations for even the most reflective professional about assumptions that influence or shape approaches to practice. My own research regularly uncovers deepseated assumptions and thinking that exert a tremendous influence on teachers' practices. I offer two examples. In the field of teaching critical thinking to international students in Australia we found teachers of critical thinking skills who do not apply these very skills to their own assumptions about the meaning of students' backgrounds and how this shapes their approach in the classroom (Liyanage, Walker, & Shokouhi, 2021). In the field of language teacher education, teacher educators too often neglect to question their conceptualizations of phenomena at the heart of language teaching and learning, such as the nature of multilingualism, and this can lead to practice that is not student-focused, ethical, and just (Livanage & Tao. 2020).

To expand on these issues, two areas are explored, albeit briefly, in the remainder of this paper:

- (i) The 'fit' of AR with the quest for quality practice teaching and learning, given alignment between current conceptualizations of teacher professional learning (Strom & Viesca, 2020), and the recursive cycle of practitioner action research
- (ii) The implications of the current pandemic which prioritize the need for teaching academics to engage in reflection and pedagogical research as they explore innovative ways to continue to improve practice in new conditions, and (ideally) reflect on assumptions about what they do, how they do it, and why they do it.

#### **Action Research and Professional Learning of Educators**

It is not new to associate AR, as a means of generating knowledge, with efforts to improve teacher practice and student learning. Kemmis (2009, p. 467) sums this up by describing AR as a "practice-changing practice", and thus a "meta-practice" that "changes people's practices, their understandings of their practices, and the conditions under which they practice" (Kemmis, 2009, p. 464). Not all attempts to change and improve practices, including some conducted under the banner of AR, employ the strategic reflexive processes of AR that begin with interrogation of assumptions or ideologies or circumstances that confine reflection on current practice and on what is possible, or the methodological framework necessary to inform and critique actions to ensure what is learned emerges from rigorous research practices as the foundation of further learning. Unfortunately, under the influence of managerial ideologies and linear product-oriented conceptions of learning, the focus

on quality in teaching and learning in HE can foster a shift towards a mechanistic view that constructs effective teaching as a set of standardized practices (Norton, 2019). This risks promotion of professional learning about teaching in HE being organized around traditional professional development models of learning based on introduction of knowledge from 'outside' the teacher's practice experience with the aim of acquisition and application of routinized approaches or practices. This approach has given us the theory-practice dichotomy, and the much-observed 'gap' between what teachers learn as theory and its 'translation' to practice.

#### A Complex Model of Teacher Learning

It will be no secret to the readers of this paper that teaching is work far from a straightforward and standardized practice. It is a contextually situated and complex activity, and our understanding of how we learn about it must account for this, that is, that the relationship between teacher learning and teaching practice is itself complex, and that teachers work in dynamic contexts emergently shaped in the multiplicity of relations between and among themselves, students, material and physical conditions, and, on a more abstract but nonetheless powerful level, dominant and/or resistant ideologies and discourses. Theorization about teacher learning that encompasses this complexity, informed by perspectives such as sociocultural views, complexity theories, and rhizomatics, requires onto-epistemological shifts (Strom & Viesca, 2020) of the kind action researchers must be prepared to contemplate.

A complex model of teacher learning positions teachers seeking to make changes amidst a multitudinous set of relations of complex processes and activities. It rejects linear conceptualizations of the connection between teacher learning and practice that "assume that the teacher has full agency to take her learning and drop it, intact, into the classroom" (Strom & Viesca, 2020, p. 1). Attempts to change or improve classroom practice often entail introducing a new or innovative idea about which a teacher or group of teachers has 'learned'. Indeed, this is typical of much of what is described as AR. The process can become focused on the product, on evaluation of the intervention to determine whether it 'works'. Implicit in these situations is the suggestion teachers can 'apply' learning, of teachers acting on their students rather than with their students, that is, relying on "a rationalist approach in which the teacher more or less controls their teaching, the human/non-human elements of the classroom are relatively stable and passive, and teacher learning and teacher practice have a one-to-one correspondence" (Strom & Viesca, 2020, p. 2). Engaging in AR in a recursive and reflexive manner that shifts focus from a product to a process orientation offers a tailor-made practical alternative to this dualist, dichotomous approach, and allows us to think of teacher learning and teacher practice as embedded within each other, or entangled in the activity of learning-practice (Strom & Viesca, 2020). Non-dualist thinking about learning-practice offers the practitioner the starting points needed to question assumptions that they have 'control' of what happens in their classroom. It shifts the focus away from the individual teacher as the

'architect' of change in classrooms, to the need to practice AR with the understanding that classrooms and learning are co-constructed. Teachers are agents with considerable influence in the social world of classroom activity, but attempts to change what happens in classrooms needs to begin with understanding that others' actions, and the influences of material and nonmaterial factors, a multiplicity of factors, shape what happens, (reflexively) shape the actions of all participants, such that the 'classroom' -the teacher, the students, the learning and teaching practices, the meaning/s of material artefacts and discourses, and so on - is emerging as the multiplicities are reshaped in responding to interactive events. Understanding of the complexity of these relations is key to teachers understanding the process of their own learning that emerges during AR when it is approached reflexively and recursively. Repositioning the teacher self as one element of a "situated, multifaceted, interactional" (Strom & Viesca, 2020, p. 6) activity means we must be prepared to interrogate and negotiate our own understanding of the world in which we work if we are to learn, and prepared to legitimize the agency of all the participants and the contextual dimensions of teaching and learning, especially our students, and to harness this learning in reflection on our actions going forward.

Kemmis (2009), in his reflections on AR as research-based practice, echoes the complexities of a teacher learning-practice model. He argues the work of the action researcher is based on a philosophical life that is much more than theorizing about the world, but about "actually saying, doing and relating in ways that are wise and prudent, and informed by theoretical knowledge" (p. 465). In following this path, the action researcher must negotiate the "mediating preconditions for practice:

- (1) cultural-discursive preconditions, which shape and give content to the 'thinking' and 'saying' that orient and justify practices;
- (2) material–economic preconditions, which shape and give content to the 'doing' of the practice; and
- (3) social-political preconditions, which shape and give content to the 'relatings' involved in the practice." (p. 466)

Crucially, Kemmis (2009) conceives of practice as a process of making and remaking these conditions that finds a way between reproduction and transformation of understandings, actions, and relatings. Likewise, Strom and Viesca (2020, p. 8) characterize teacher learning-practice as a "highly mediated activity" produced, not by an individual, but through collective interaction of a multiplicity of factors connected to

specific, situated political, cultural, historical, and material conditions and power flows, ... (as) emergent vital and ongoing processes that are constantly changing as different elements in teaching assemblages come into composition and develop/transform in relation to all other elements of an assemblage. (Strom & Viesca, 2020, p. 8)

When we see this alignment of the principles and practices of AR with the processes of teacher learning-practice, I think we are justified in arguing for AR as a powerful tool for learning about how we can approach improving the quality of teaching in HE, as a path for powerful learning of our students, and a research strategy with a sound conceptual foundation for contributing important research to what we know about teaching and learning.

#### **Action Research and the Global Pandemic**

I now turn briefly to a situation that calls for an urgent focus on how we as teachers in HE must continue to learn about our practices in order to offer students high quality teaching that enables them to achieve their potential, both as students and as graduates - the disruption ensuing from the global pandemic. At the moment, this is arguably the greatest challenge we all share as teachers in HE and a circumstance that demands we rethink much about how and why we teach.

Often left without any alternative given government directions and lockdowns, universities around the world closed their campuses and moved their courses online to prevent the spread of COVID-19. Many institutions continue to remain in this situation. In other instances, both teachers and students are experiencing ongoing disruptions of on-campus study because of regular returns to lockdown of varying durations, and restrictions on international travel that prevent student mobility. The question central to the current situation that is preoccupying most teachers in HE is one of quality – quality of the online teaching and learning that has replaced face-toface teaching. But as practitioners and action researchers we need to scrutinize not only the efforts we make to adjust to the new circumstances. My thinking here is that behind our responses to the pandemic is the expectation that at some time in the (hopefully near) future, teaching will 'return to normal'. This is an opportune time to ask ourselves challenging questions about the 'normal', and whether the conventional or traditional modes of on-campus teaching are still providing the quality of teaching that best serves the interests and needs of our students. Questions such as, should we be aiming to simply 'return to normal'? Are traditional practices of teaching, and of assessment, aligned with the practices of environments in which graduates will work? Do teaching practices that have already been evolving to adapt to the realities of our connected on-line world represent an integral element of the future of teaching in HE? If so, is this trajectory now ready to be pursued further? Might there actually be better ways, more appropriate ways, more responsive ways, of teaching and learning than the traditional models of on-campus face-to-face teaching and learning? Might these ways be more effective in preparing our students for the circumstances and demands that they will face as graduates? And so on.

Of course, I understand we have all been asking many of these questions already, before any pandemic forced us to hurriedly change the ways we worked. Many institutions already had on-line learning management systems in operation, both to allow off-campus enrolments and to complement and enrich face-to-face delivery, or to integrate on- and off-campus students. Many of our colleagues are engaged in exploration and investigation of practice attuned to global classrooms and technology as both an object and medium of teaching and learning, and the integration of technology/ICT and face-to-face teaching/learning, or blended learning, has been the subject of AR for some time (e.g., Brudermann, 2010; Eales-Reynolds, Gillham, Grech, Clarke, & Cornell, 2012; Mathews, Andrews, & Luck, 2012; Stover & Vere, 2013). Now, however, it has become an imperative, and many are unprepared. Studies in Australia prior to wholesale movement to online teaching found that many academics gave lower priority to on-line teaching; that academics' lack of skill and experience in teaching online contributed to significantly lower course completion and graduation rates for those studying online than for on-campus students (Stone, 2017). Many teachers in HE have no personal experience of studying online as learners (Devlin & McKay, 2016), and in response to the sudden shift to online teaching, without appropriate training or support, many have coped by simply uploading face-to-face teaching materials.

A methodical approach using the AR cycle can provide an informed, and ethical, practice-centered understanding of attempts to reshape the way/s we approach out task as educators. Why do we need this? Because, as Kemmis (2009, p. 464) reminds us about AR as a practice-changing practice, although the aim is always to change practice for the better, change "may have consequences that are unsustainable for practitioners of these practices or for the other people involved in them," for example, our students. By demanding and cultivating institutional cultures that value the practice-changing practice of academics researching their own teaching, and engaging with students as co-researchers in our practice and their learning, "faculty members and the student body are provided with the opportunity to contribute toward the accomplishment of institutional change from the 'middle out'" (Gibbs et al., 2017, p. 5). For all of us, this a time for learning. We must frame that learning by turning our gaze on "the mediating preconditions" (Kemmis, 2009, p. 466) to interrogate our assumptions, negotiate the dynamic complexities of the "emergent vital and ongoing processes that are constantly changing as different elements in teaching assemblages come into composition and develop/transform in relation to all other elements of an assemblage" (Strom & Viesca, 2020, p. 8), if we are to find an acceptable path between reproduction and transformation of practice in the collective endeavor of teaching and learning in turbulent times.

#### **Concluding Remarks**

More broadly, putting the urgency of responding to a pandemic to the side, engaging with our colleagues and our students to research changes in practices can only advance the endeavor of higher education and build the knowledge base of teaching learning scholarship (Harvey & Jones, 2021). What is equally important, AR offers valid learning and research pathways for academics in the global 'South', who often work in environments where opportunities for funded research are scarce, or professional learning is too often equated with travelling to more privilged

institutions in the 'North' rather than situated in local contexts. My own field of Teaching English to Speakers of Other Languages is a prime example of the contemporary international flow of 'knowledge' about teaching and learning practices from the universities of the geopolitical North to institutions in the South that are grappling with policies mandating English language components in undergraduate degrees or the introduction of English medium instruction programs (e.g., see Livanage, 2021a). Reliance on models of teacher professional learning based on importation of pedagogies, via either travel of teachers overseas to Englishdominant locations, or by bringing in experts from Anglophone nations, can open a cultural and educational Pandora's box of problems in the task of attempting to make international PD contextually responsive (Livanage & Bartlett, 2008; Livanage & Canagarajah, 2019; Liyanage & Walker, 2021; Liyanage, Walker, & Singh, 2015). However, and to our mutual benefit, through sharing our findings and conclusions to contextualize the local globally, we can also reinforce international and transnational connections. That we need to respond in our own classrooms and institutions to the new demands of these new times that, as researchers and teaching practitioners, we are all experiencing across the globe, foregrounds the importance of collaboration and of the dissemination of research findings. Our actions will be contextualized by local issues and circumstances in which our practices are embedded, but the connections and similarities we share mean what we learn will be of interest and value well outside the confines of our classrooms, our institutions, and transcend any national or regional bondaries.

Action research (AR), with its focus on reflection aligns ideologically, as Harvey and Jones (2021, p. 173) point out, with the culture and the work of teachers in HE which is based on "collegiality, evidence- and theory-based practice, and a focus on reflection and evaluation to inform change and innovation." However, I have outlined some arguments for ongoing interrogation of attitudes to and perceptions of AR if its practice is to realize the potential it offers - to play a central role in the work of individuals and communities of higher educators, and HE institutions, committed to developing and refining teaching through contributing to the field of teaching and learning research. In turn, this means developing and refining the methodologies of AR, and the research capabilities of academics and their students as co-researchers. The impact could be far-reaching if conducted ethically, rigorously and with an orientation to the wider, global HE community. While we acknowledge the local and unique circumstances of the endeavour of teaching and learning in places such as post-colonial and post-conflict Sri Lanka (see Liyanage, 2021b), amidst diversity we can always find shared expectations, experiences, dilemmas, and opportunities. The needs of students in HE in Sri Lanka are not removed from those of students elsewhere, and the practices and findings of AR here can be shared to make a difference in classrooms and institutions in other parts of the world. AR offers a platform for a community of educators and researchers working to address their students' needs through partnerships with colleagues and students, creating, mediating and sustaining dialogues between like-minded individuals and between

institutions with similar concerns – doing their best to learn about teaching and learnng in and through a learning-practice process, doing their best to learn about this process, doing their best to respond to the demands of changing circumstances, doing their best to scrutinize their practices and assumptions, and doing their best to make changes with the aim of moving toward a better and more just world and to provide students with the opportunities and capabilities to do the same.

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## **PLENARY SPEECH**

## PLENARY SPEECH

#### **Critical Reflection for Action Research: Pandemic and Beyond**

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A fundamental question that an action researcher should ask is 'How can I improve my practice?' This emphasises the need for action researchers to reflect upon their own practice. Reflective practice is a key term used in education and it is the learning that takes place through and from experience. Although many practitioners may reflect upon their day-to-day practices and experiences, action research needs a more critical approach for reflection in action and reflection on action which would challenge the practitioner to move beyond the normal practice (McAteer, 2013).

Critical reflection is not the end product of action research, it is only the starting point. Evolving action based on reflection is where action research takes place. Therefore, an action researcher needs to understand the core principles of critical reflection as well as how to convert the outcomes of the reflection into action in order to go through the cycle of action research. Covid-19 pandemic has brought many challenges to practitioners in education and as a result our understanding and implementation of research in general is changing. Although the core principles of reflective practice remain the same, the tools used in critical reflections are also changing. In particular, the need to use e-reflection is rising and it opens up new avenues for action researchers.

In this talk I will discuss how important attributes such as open-mindedness, wholeheartedness and responsibility (McGregor & Cartwright, 2011) help a practitioner to critically evaluate aspects such as their subject knowledge, pedagogic knowledge, curriculum knowledge, acknowledgement of educational values, personal constructs, identity and pedagogic enactment in the classroom (ibid) and how to convert the outcomes of these critical reflections into action research projects. The talk will also highlight how e-tools such as audio and video journaling, collaborative webfolios, collaborative e-reflections, blogging and podcasting can be used for critical reflection and some recent research findings on the use of such tools in educational contexts.

## **EXTENDED ABSTRACTS**

## Enhancing the graduation rate: A case study at the University of Vocational Technology

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#### Abstract

University of Vocational Technology delivers Bachelor of Technology degree courses in different disciplines to the students with National Vocational Qualifications. These students are different from traditional full-time university students, and they acquire highly employable diploma qualifications. The university offers courses as both weekday programmes and weekend programmes. Average performance of students in the weekday mode has shown to be weaker compared to students in the weekend mode specifically, in final year projects, which need self-initiation of students to complete the same. However, these students complete the taught modules successfully. A review of literature on stude n t s ' performance academic used wa s t o  $c \circ n$ factors affecting students' success. Ιt wa s structured situations, and waiting for instructions rather than taking self-initiated actions. Therefore, the study attempted to bring structured interactions with academics for this module. Preliminary findings indicate increased performance of a majority of students. This shows that, from the beginning of the degree, they are exposed to structured and teacher-centred study activities where they are spoon-fed. As a result, they find it difficult to cope up with the demands of self-initiated activities needed in the project module. Although their performance has improved due to the structured context given in the study, it does not serve the purpose of the module, which is aimed at developing competencies needed to achieve set targets with minimum supervision. Therefore, it is recommended to increase learner-centred activities in course delivery from the beginning, rather than waiting till the final year to allow students exposure to such situations.

*Key words:* Graduation, National vocational qualifications, Final year project module, University of Vocational Technology, Weekday programmes

#### Introduction

University of Vocational Technology (UoVT) delivers Bachelor of Technology (B. Tech.) degrees to National Vocational Qualification (NVQ) holders, and degree courses are offered in two modes; weekday programmes and weekend programmes. Analysis of graduation rate in weekday programmes shows considerable differences compared to the enrolled number. Hence, this was identified as an area of research interest. Analysis of results indicated that most of the students have completed taught modules successfully whereas many have failed to complete the final year project module in which they have to work on their own with self-initiation under broad guidance of supervisors. As students wait for frequent instructions from supervisors, rather than taking their own initiation, they fail to meet the deadlines. This prevents them in successfully completing the projects, and hence graduating.

This study aimed at identifying the extent to which lecturers can help the students in weekday programmes to complete the final year projects, and thereby successfully complete their degrees.

Based on the above, the following research questions were formulated. What factors influence students to successfully complete the final year project module? How can academics support students to complete the final year project successfully? Hence, the objectives of the study were to identify factors and academic contribution towards the successful completion of projects.

#### **Literature Survey**

With regard to student retention or dropout, Tinto (1975) highlights the reasons as to why a student completes a study programme or drops out from it. Tinto (1975) says that these could be predicted through the integration of academic factors and social factors, over a period of time. Integration of academic factors includes grade/mark, academic self-esteem, enjoying the subject/s, identification of one's role as a student etc. Integration of social factors includes the number of friends a student associates, personal contacts with academics etc. The study done by Hussain (2006) indicated that guidance services have significant effect on students' study, attitude, study habits and academic achievement. However, as observed by Memduhoglu and Tanhan (2013), the main contributors for the academic achievement of university students are not only organisational factors, family, group of friends and environment, but also motivation and socioeconomic situation. According to Goddard (2013), environment and personal characteristics of students play an important role in their academic performance. Additionally, assistance given by staff of an academic institution, family members and other communities also have a remarkable contribution for fulfilling academic goals.

Şirin and Şahin (2020) have seen certain different factors that contribute to academic success. According to them, gender, university, choice of the department and father's education are the important contributors for students' academic success. Additionally, factors such as counselling, support from university staff and students' communication with academics have been found to be considerably effective. Their findings further say that, guidance, support and communication skills of academics are also effective contributors on students' success.

In summary, academic performance depends on students' own characteristics, academic interaction, institutional and social factors. However, out of these factors academic interaction is the one which individual academics can manipulate for the betterment of students. Therefore, this factor was taken into consideration when conducting this study, assuming that higher interaction with academics in more self-directed modules can improve students' performance in those modules.

#### Methodology

#### Participants:

Undergraduates of the academic year 2017/2018 were the population. A sample consisting of 35 students following the Manufacturing Technology degree programme was selected using convenience sampling.

#### Process:

The final year project module was used for manipulating interactions with students. As a standard practice, supervisors who were subject experts of areas of projects were allocated to each project group. Researchers intervened to the process as coordinators. Main actions taken were allocating specified time durations for students to meet coordinators once in two weeks and discussing progress and issues of the module, sharing assessment rubrics with students, encouraging students to meet supervisors frequently at least once a week and reminding deadlines for activities through emails.

#### Type of data:

The data were supervisors' feedback and students' performance in progress presentations. Therefore, they consisted of both qualitative and quantitative data. Supervisors' feedback consisted of qualitative data which indicated their opinion about students' progress. Emergent coding was used in analysing preliminary data, where similar opinions were grouped to form categories. During the progress review presentations, independent evaluators allocated marks for each group based on a pre-shared rubric, which yielded quantitative data. Simple descriptive statistics were used to analyse the data.

#### **Results and Discussion**

There were 11 student groups in total and each group had three to four members, based on the tentative title and the area of each project. All students participated in the progress review sessions and demonstrated considerable progress, compared to previous groups. Supervisors' feedback indicated that the students meet them regularly. However, two out of six supervisors expressed that the actual involvement of certain students was poor, and only one or two members of certain groups actively attended the consultative meetings and assigned tasks. Table 1 shows the summary of supervisors' feedback given for individual students.

Response for student's performance	Unsatisfactory	Acceptable	Satisfactory	Highly satisfactory
Number of students	04	10	18	03

Table 1. Summary of supervisors' feedback for students' performance

The literature review helped in identifying the factors that influence students in successfully completing degrees, and out of them the interaction of academics with students was shown as an outstanding factor, as 88.6% of students have shown the tendency to complete their projects, as indicated in table 1. This is the influence that academics can make by increasing academic interaction.

Table 2 shows average marks given for individual students. Except four students, others gave acceptable level presentations on their progress. Assessment of independent evaluators, as

indicated in table 2, consolidate the feedback given by the supervisors. As 31 out of 35 show acceptable level performances, this is a clear improvement compared to the previous batches.

Range of marks	1-29	30 - 39	40 -49	50 -59	60 -69	70-79	80-89
Number of students	4	05	05	13	05	02	01

Table 2. Range of marks assigned to individual students

Since the researchers have control in changing interactions in-between students and supervisors, weak students were instructed to meet their supervisors at least once a week, in addition to normal consultative meetings, and provide evidence for such meetings.

#### Conclusions

#### **Implications for Practice**

According to preliminary findings of the study, students in general show tendency to complete the module successfully. Students have been spoon-fed from school system onward and hence they expect someone to provide guidance and control. This is evident as they do well in taught modules where definite activities are there for them to complete within declared timelines, which are well-structured. Also, they appear to be conditioned to prepare and face structured written examinations. They do well on these by practicing with past papers. In other words, in taught modules the learning process can be termed as directed learning. However, in the case of project modules, they do not get this kind of a well deigned structure to work with. Instead, they are expected to develop the structure by themselves. Therefore, learning project modules can be considered as self-directed, where they find it difficult to cope up with, and eventually, show poor performance. In this study, an attempt was made to bring about a kind of a structured process in to the project module, which seems to work well. By introducing the structuring process, it will be possible to improve their tendency to complete the modules successfully. However, this will not promote their independent practice as well as selflearning and self-initiated practice, which are the demand of the industry. In order to develop the above skills, a system, emphasising more on self-directed learning should be introduced from semester one onwards rather than trying to do it during the final year.

Therefore, academics have responsibility to utilise more learner-centred activities in classrooms, in order to enhance students' independent learning abilities. When specifying curriculum content and allocating time for individual modules of degree programmes, this can also be considered. As the university, it is important to implement such kind of a system, giving more autonomy to students on their learning, as it strives to produce graduates who can fulfil demands of the industry while making students lifelong learners. However, the impact of the actions taken can only be seen when the students complete the projects.

#### Recommendations

Initial findings of the study will be utilised for enhancing academics' interactions with students in other modules. Academics can facilitate students by enhancing their interactions with students. However, this would improve students' performance in terms of module completion, and it will not enhance their self-directed learning abilities and working abilities with minimum guidance and supervision. Therefore, it is recommended to increase learner-centred activities in course delivery.

#### Disseminate findings

Findings will be shared among the concerned individuals to take necessary actions, within their capacity. In personal capacity, actions will be taken to increase transparency of continuous assessments and address students' issues related to unfair treatment, if any.

#### Lessons learnt

Using student-centred course delivery strategies will be beneficial when developing students' independent learning abilities. At the same time, use of teacher-centred strategies will not facilitate independent learning abilities of the students.

#### Future studies

It is recommended to conduct a study to assess the effectiveness of the actions suggested upon completion of the student projects.

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- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45, 89-125.
# An Empirical View of The Use of Recorded Speeches In The ELT Classroom During The Period Of COVID-19

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#### Abstract

This study aimed at identifying the use of recorded speeches of tertiary level ESL students during the period of COVID 19. In an academic setting, English speaking ability is considered the most important skill to be developed and enhanced in language learners. It has been observed that it is important to consider how teachers can create a positive engagement in the classroom using technology. In response to the extensive use of technology in the field of education, particularly in English language learning and teaching context, both learners and teachers are expected to use technology due to the current pandemic situation in all across the world. In the 21<sup>st</sup> century being literate, not only requires reading and writing, but also the ability to upload, download, attach, share, save and respond to a digital activity using internet and technology. It would be advantageous if the teachers can integrate learning objectives with effective use of technology. Therefore, according to the researchers, tertiary level students can improve their speaking skill if they are taught to become effective and competent in recorded oral tests. The present study was conducted to identify the challenges that were encountered by students and teachers in the use of recorded speeches in the ELT classroom during the period of COVID-19. One hundred and fifty (N-150) undergraduates were taken using the random sampling method from a population of 400 undergraduates who were enrolled in the English intensive program in the Faculty of Management and Finance, University of Ruhuna. Qualitative method was used to identify the challenges in the use of recorded speeches. I n order t o have the students' pе designed for students to get the first-hand experience on recorded speeches and questionnaires were also provided to receive the feedback from them. Results in this study revealed that there is an urgent need to implement these types of activities in ESL enhance students' classrooms t o speaking ski the learning process and motivate them.

Key words: Speaking Skill, Recorded Speeches, Challenges, ESL learners, COVID-19

#### Introduction

English Language consists of all the four skills namely listening, speaking, reading and writing. Among the four skills, speaking could be seen as the paramount skill during the English learning process since learners need to communicate with others in order to express their ideas and feelings. Speaking as a productive skill is also considered as a part of the teaching curriculum and also for assessment (Luoma, 2004). Although speaking skill is considered an important skill in an ESL classroom, it has been a challenging task to the teachers to assess speaking. However, with the prevailing COVID 19 pandemic situation, distance learning is playing a huge role in the education sector. The most common education practices attempt to improve learning through the use of digital devices whether they are effective or not. Since it was started as an alternative, both learners and teachers have to encounter certain challenges in learning and teaching. Consequently, this study helped us identify the challenges encountered by the teachers and learners in the use of recorded oral speeches. Brown (2004) has argued that interaction is essential in speaking skill yet due to the current pandemic condition in the world, we have to avoid face to face interaction as much as possible. Therefore, it is a challenge for the teachers to assess the learners' spoken language proficiency.

The present study is carried out to identify the challenges in the use of recorded oral speeches in tertiary level ESL students during the period of COVID 19.

#### Research questions

What are the challenges encountered by the students in recording oral speeches? What are the perceptions of the teachers in the use of recorded oral speeches?

#### **Literature Review**

As stated by Richards and Renandya (2002:210), speaking is one of the central components of communication. Speaking in a second language has been considered the most challenging of the four skills because it is a productive skill that involves a complex process of constructing meaning (Celce-Murcia & Olshtain, 2000). Many studies have been conducted to show that there is a need to improve speaking skill among undergraduates as it is a fundamental requirement in the job field. However, due to the shortage of facilities in the university system existing ESL students are not proficient in their speaking skills, and they find it difficult to express themselves in English.

According to Gert and Hans (2008:207), speaking is known as speech or utterances with the purpose of having intention to be recognized by speaker, and the receiver processes the statements in order to recognize their intentions. Richards (2008:21) states that the functions of speaking is classified into three; talk as interaction, talk as transaction and talk as performance.

There are several studies that are addressed in acquiring English language skills through technology. Turget (2011) emphasizes the importance of a technology rich environment in teaching literacy supporting that the use of laptops allows the teachers to make their teaching content more visual, provide practice in learning content through online games, create a soothing environment by playing music, and help English language learners develop language skills. Moreover, technology has taken a step forward from traditional teaching methods. "Students are found to be motivated to learn when they thought the learning task was meaningful and interesting" (Semerci and Duman, 2013). Therefore, it is apparent that technology motivates learners in engaging them in meaningful computer based learning tasks. The preceding scenario shows that there is a need to research further on the challenges faced in recording oral speeches.

# Methodology

One hundred and fifty (N-150) undergraduates were taken as the study participants using the random sampling method from a population of 400 undergraduates who were enrolled in the English intensive program in the Faculty of Management and Finance, University of Ruhuna. A recorded speech was given as the pre-test for the students by the researchers in order to identify the teachers' perspectives regarding this activity. In addition, a feedback form was given at the end of the pre-test to understand students' challenges. Qualitative method was used to identify the challenges and perceptions. The students were pre-instructed with the speech topics, guidelines and rubrics. They were advised to upload the recorded speeches to the Google drive before the deadline.

# Results

# *First Phase: The perceptions of teachers towards the use of recorded oral speeches. Lack of authenticity*

Teachers involved in the study shared their views regarding the use of recorded speeches. The results showed that the speeches cannot be taken as a real time oral presentation. According to the participants of the study, the sentences were not naturally produced. Their speeches were like a mere reading or in other words replication of words on paper. According to the oral recordings, it was noted that these speeches were less personal; the student is talking to a machine and not to a person. Thereby, we found that there was a lack of authenticity, validity, and connection in their speeches when it was recorded.

Furthermore, considering the delivery of the speeches, it was found that there was no rapid or slower rate in the speeches in order to emphasize the main points of the speech. Most of the students have produced a monotone drone or a rapid "machine-gun" style delivery with lack of pauses in the speech. We have noticed that there was lack of normal speaking pitch where the voice was naturally settled and those speeches ended up sounding artificial. In addition to the voice, certain drawbacks in physical manipulation were found. There was a lack of visual aspects of communication such as gestures and facial expressions. Considering their body movement, posture and facial expression, some students showed their performance anxiety and nervousness. They did not maintain eye contact with the screen, instead they were looking at what they have written in their papers. Their faces were not much expressive. They were reluctant to use hand gestures showing that they were not relaxed and confident.

## Lack of Time Management

Time management is a vital skill, especially to have a success in academic work. Time management skill affects learning. It is very essential to consider that in assessment too. From a pragmatic view of language performance, speaking is a very essential component for undergraduates. In the Sri Lankan context, speaking skill is not taken into a greater consideration in primary or secondary level, and as a result, it is not being tested even in the tertiary level. Therefore, students tend to disregard this component. With the prevailing pandemic situation in the society, online platforms are being excessively used in teaching and learning. As a result, the students were requested to use digital platforms in recording their oral speeches. In such situations, students did not stick to the given time, and it was unfair by

the other students. They were more concerned on the delivery and not about the time since there was no teacher involvement. The students who were capable to function well with the time management skill had to face difficulty in delivering the whole speech within the allocated time.

# Lack of Errors

The students tend to make minimum number of errors in the recorded oral speeches and it did not enable the teacher to identify the issues or mistakes that the students had regarding their speaking skill. According to Thornbury and Slade (2007), recorded monologue is one of the types of oral tests. Though it was less stressful in comparison to live performance, it was difficult for the student to have real production of the language. Moreover, the students had opportunity to record the speech again and again in order to minimize their errors and feedback to the student performance could not be given at the moment itself. As identified, there was no teacher-student and student-teacher interaction.

# Lack of Techno-Savvy

Being technology savvy is basically one's skill to be smart with technology. This skill reaches far beyond 'understanding' the concepts of how technology works and encompasses the 'utilization' of such modern technology with the intention of enhancing productivity and efficiency. It was evident that most of the students had undergone several technical issues. There were many students who had spoken well but not techno- savvy. These recorded speeches did not reflect their actual skills and abilities. As a result, these type of speaking tests may not discriminate learners.

## Intended Outcomes

It seemed that the intended outcomes were not reached by many learners. Rather than adhering to the given rubrics, they had followed their own ways in making the recorded speeches. Some students had embedded some other video clips downloaded from the internet, in the middle of their speeches as for the additional details and to minimize selfperformance. Even though, it empowered the content, it was not their own true skill or ability. Second Phase: Challenges faced by the students in the use of recorded oral speeches

The researchers categorized the perceptions of the students under strengths and weaknesses.

# Strengths

Technically experienced learners found it more convenient as recorded speech enabled them to have enough practice and thereby they were able to come up with better performance. In reality, most of the learners are very anxious to express themselves face to face in a physical ESL classroom. Moreover, it was an advantage for the students with the current pandemic situation in order to reduce the anxiety level as they were not in front of a live assessor. It was also noted that students found it convenient to do their oral speeches with minimum preparations.

#### Weaknesses

When considering the weaknesses, the students claimed that they found it difficult to use technology because of the lack of experience based on such activities and necessary facilities. The students had to allocate more time to re-record several times to have a better output with minimum errors. Furthermore, the students suggested that they had no sense of testing in the given assessment as they were not performing in front of a live assessor. In addition, the students claimed that it was their first time experience in using Google drive to upload large files, and they met with multiple challenges in the process of uploading.

#### Conclusion

It is evident that recorded oral speeches should be implemented in the classroom from time to time to increase motivation of the students and to maintain the validity of assessment, which in return increases the exposure to these types of activities. In order to maintain the consistency in education system during this pandemic situation, both teachers and learners should become familiar with technology, which is still not widespread in the language classrooms. Furthermore, it would be more effective if the teacher could provide a sample, outlining the intended basic skills and equipment for these types of computer based activities in assessment.

Based on the feedback of the students, it was evident that they had the perception that every speaking setting happens in a physical classroom where they have to stand in front of a large audience by being well groomed but they increasingly expect to integrate technology into learning as it offers new ways for practicing language. There was a general lack of technology training for students with regard to quality of the video, attaching the e-documents and formatting issues. It was disadvantageous for the students who were lacking these technological facilities. There is less research available focusing on students' perception towards recorded oral speeches. Therefore foregoing research findings tend to pave the way for future research.

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# Action Research on How to Overcome the Challenges in The Online TEACHING-Learning Process During Covid-19 Lockdown in Non-state Higher Education Platforms

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#### Abstract

Amidst COVID 19 lockdown, effective online teaching and learning in higher education was a challenge in terms of applying different learning theories to online delivery modes. This action research focused on higher education course delivery modes and teaching strategies for adult professional students in a faculty of education that offer international degree programs in a private international learning center in Sri Lanka. The course instructor was the primary investigator, and data were collected using different instruments, including secondary data, reflective journal and online survey questionnaire for over three semesters during the pandemic. Findings indicate that students enrolled in t elevandning, tsedf-weguhateleds Master's degree programs study modes independent and bachelor's with interactive lectures. For professional development, adult educators must keep pace with emerging online technology and teaching and learning strategies with interactive concept-based inquiry in lectures and collaborative/independent learning strategies. The adult educator is a reflective practitioner.

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**Keywords**: reflective practitioner, adult learner, Synchronous and asynchronous, U-Learning and Heutagogy

#### Introduction

World education is faced with growing challenges relating to online learning during the COVID-19 pandemic, including students without reliable internet access to participate in digital learning (World Economic Forum WEF, 2020). For those who have access to the right technology, effective online teaching and learning is a challenge (The World Bank, 2020; WEF, 2020). However, online teaching and learning have to be the catalyst to create a more effective method of educating students, especially in higher education, and make e-learning part of the 'new normal' (WEF, 2020).

As Open University of Malaysia (OUM), programs were offered as blended learning, which included on-site and online instructional encounters; within a week of COVID-19 lockdown in March 2020, this local International Institute was faced with the challenge of offering completely online courses. As a course instructor playing the role of participant-observer, the action researcher faced challenges such as developing online instructional materials, changing delivery methods and strategies, and time constraints in offering instruction entirely

on distance online delivery mode without physical contact. The purpose of this study was conducting an action research on how to overcome the challenges in the online teaching/learning process during Covid-19 lockdown in a non - state higher education platform. The specific objectives of the action research questions focused on identifying challenges, planning and implementing actions as possible interventions on instructor's online course materials development and delivery, and online teaching methods and strategies. The research questions were formed as follows:

What are the identified challenges and solutions in online materials development and delivery for effective online instructions?

What are the identified challenges and solutions for online instructional methods and strategies for effective online delivery?

This study is significant as it focuses on future changes in instructors' online course delivery and has future consequences for students as to how they will benefit through this process.

#### Theoretical Rationale

A review of theoretical conclusions derived from Gerstein's (2013) and ragogy and heuterology of mobile learning and Picciano's (2017) pedagogical framework of the integrated model of instruction in relation to online education has implications for the challenges faced by the researcher for effective online instruction. Picciano (2017) proposed an integrated "Multimodal Model for Online Education" based on pedagogical purposes (p.1). Components of this model are content, social-emotional, self-paced independent study, ouestioning and discussion, assessment/evaluation, collaboration, and reflection, which have solutions to the researcher's online teaching and learning challenges. Gerstein (2013) proposed a progressive approach to online teaching and learning with self-directed learning and Web 3.0 generation of Internet services. As proposed in the literature, the progression from pedagogy and andragogy to heutagogical approach has implications for the researcher to plan interventions for effective online instruction for adults. Furthermore, the student decides how to learn, and is supported by outside resources, including the teacher (Gerstein, 2013). Picciano (2017); Casey (2008); and Koohang, Riley, Smith and Schreurs (2009) promote a learner-centred model for designing e-learning assignments/activities within elearning environments. The integrated model is based on constructivist learning theory as well as behaviourist, cognitive-constructivist, E-learning, U-learning theories. Ubiquitous learning is an amalgam of e-learning and m-learning, allowing learning to take place independently of time and place (Picciano, 2017; Casey, 2008; Koohang, Riley, Smith and Schreurs, 2009). Conclusions from such researchers help understand the issues and challenges and planning interventions for adult students in this study.

Gerstein (2013) compared the pedagogy, andragogy and heutagogy focusing on learning dependence, resources for learning, reasons for learning, focus of learning, motivation and role of the teacher in each category. Gerstein (2013) promoted critical thinking strategies for e-learning; for example, move analysis and analysis of underline assumptions and debate, explaining the significance of identifying the primary and secondary causes of a problem. Gerstein's (2013) conclusions have implications for designing and deliver online instruction for adult learners from a heutagogical lifelong learning perspective for adults in this action research. Gerstein (2013) argued that in 3.0 environment, meaning is socially constructed and

contextually reinvented, technology is everywhere (digital universe), schools are located everywhere thoroughly infused into society and workplaces, hardware and software in schools are available at a low price and are used purposively. However, some of the challenges for online education needs to be identified, including access and tools to support distance education delivery such as live-stream, online learning management, promoting online teaching and learning, training faculty; other challenges are online delivery methods and types of technological tools. (Ryotaro, Marito, Angelica & Hewagamage, 2020).

#### Methodology

Kurt Lewin model of action research design was used to identify problems/issues and planning, action/intervention, evaluation with observation and reflection and re-planning in relation to online teaching and learning. This study contemplated the implementation of this approach by following a cyclical and spiralling process. This action research focused on instructor-led courses for Bachelor and Master level education degree programs offered by the local Institute of the Open University of Malaysia (OUM) and some of the courses offered for the first time at the local learning centre. The students were primarily female adult teaching professionals in the first, second and third years of Early Childhood, Primary Education and TESL degree programs.

This research implied designing, monitoring, observing and recording situations or events in the online classroom. The study was limited to three semesters, and data collection was limited to the qualitative method. Cycle One online bachelor and Master level degree course delivery was from September 2020-April 2021, covering two semesters with 9 courses with 80 students enrolled and courses offered on Saturdays. Cycle Two started from May 2021 with two courses with 19 students enrolled and was ongoing.

The following qualitative data collection instruments were used to collect data. Cycle 1 and 2 included Reflective Journal notes of the researcher based on observations, secondary data analysis such as MOODLE e-learning course materials, students' assignment documents, interview with academic administration, feedback survey for students and an online meeting with all registered students for their feedback. The online survey was administered to all participants using SWOT method for student feedback at the end of Cycle 1 and Cycle 2, and academic administration leaders were interviewed to identify the challenges and plan actions. Qualitative data collected throughout the steps of action research in a cyclical process were analyzed, and the data were grouped into categories or themes. Thematic data analysis involves the analysis of themes that emerge from the data that has been collected. The themes emerging from the data are not imposed by the researcher but are inherent in the data. For example, written journal entry notes were thematically analyzed periodically throughout the course action research project.

For the validity of this study, data triangulation of reflective journal, interviews of academic administration, student feedback and secondary data were considered key aspects in providing a full explanation of behaviours by studying them from different points of view. In order to protect the participants' identity, ethical consideration was obtained as part of the research process. Firstly, a request form was sent to the academic administration to obtain permission, follw and then the instructor-researcher safeguarded participants' confidentiality.

#### **Results and Discussion**

# 1. What are the identified challenges and solutions in online materials development and delivery for effective online instruction?

In Cycle One, from September 2020 to April 2021, the action researcher as the instructor was faced with challenges to design teaching materials and offer instruction entirely on distance online delivery mode without physical contact. Hence, developing online instructional materials, changed delivery methods to online instruction and time constraints to develop online delivery materials were initial issues that led to reflection and action, as interventions to make instruction more effective. The researcher collaborated with the ICT department and academic administration of the local institute at the beginning of this critical juncture to design online materials as an intervention to overcome the challenges. In Cycle One as an intervention for asynchronous content delivery on MOODLE/LMS, some courses were prerecorded for self-regulated independent study with MCQs for each pre-recorded session to monitor class participation as an intervention for this sudden change to complete online instruction. In addition, Softcopy of the OUM textbook and assignments and past papers were uploaded for self-study. Live-stream Zoom lectures were recorded with PowerPoint and uploaded. As supplementary materials, YouTube videos links and reading materials were provided. WhatsApp and email were also used as a mode of communication for each batch of students as interventions.

At the completion of Cycle 1 interventions and completion of the course instructions, student feedback through the survey, self-reflections and Zoom meeting with students, the researcher identified issues such as lack of students' attendance in synchronous lessons. An online zoom meeting for all students was conducted to identify the other issues students face, as an intervention for the above issue. As bachelor's level students requested at the end of Cycle 1 Zoom meeting and feedback survey, pre-recorded sessions were replaced with Synchronous live stream sessions for all courses consisting of 4 sessions of 3-hour lectures (total of 12 hours) for each course followed by assignment discussion. At the end of Cycle 1, however, many students in the Master's level program preferred self-regulated independent study with pre-recorded videos and other materials on MOODLE/LMS. However, the quality of the video presentation balancing concepts and practical application was their requirement. Time constraints for online materials preparation and deliver new courses online effectively to be offered within two days with four 3 hour lectures, lack of students' participation in some live stream courses, and late arrival of assignments for discussion were some challenges at the end of CYCLE 1.

Cycle Two started from May 2021 with two courses with 19 students enrolled and was ongoing. Cycle 2, addressed identified issues as interventions, live stream sessions, and the instructor's presentations included interactive elements. Cycle 2, survey results revealed that students were satisfied with asynchronous teaching Materials on MOODLE/LMS. However, more reflection and improvement is necessary as to the quality presentations. Hence, editing PowerPoints and uploading them on MOODLE were supported by academic administration and IT department teams. First-year students from new batches of Bachelor of Education programs had requested and attended live stream classes, whereas seniors and Master level students desired self-regulated independent study. This factor is a challenge to make asynchronous materials appealing for self-study. The could be because new students needed some facilitation from lecturer in line with andragogical approach, while seniors in the

bachelor's and master's level education programs are more independent and self-regulated in line with heutagogical approaches as learners become more comfortable with academic skills. However, from a social constructivist point of view, online interaction is necessary for team learning.

# 2. What are the identified challenges and solutions for online instructional methods and strategies for effective online delivery?

The action researcher, as the instructor, was faced with challenges of passing instructions entirely on distance online delivery mode without physical contact, and to deliver effective instructions with online instructional methods and strategies. Hence, effective, engaging and motivating online instructional methods and strategies were the initial issues that led to reflection and action as interventions to make instruction more effective in each Cycle. At the beginning of Cycle 1, the challenge was to deliver effective live-stream instructional strategies. Secondary data, such as analysis of recorded lectures, student feedback surveys for each Cycle, indicated that the strategy of making live stream lecture interactive included each student taking turns to read notes on slides, followed by questions and answers and illustration of the main concepts by the instructor at intervals, sharing practical experience and application by students and introducing YouTube videos for real-world teaching scenarios in the class. Furthermore, assignment discussion was followed by student-led discussions and introducing reading materials and information search techniques. In addition, MCOs or essay-type written examination preparation took place for the final test with concepts emerging from each topic. Students' feedback at the end of Cycle 1 regarding instructional methods and strategies was positive, but attendance in live-stream lectures was an issue.

In CYCLE 2, as attendance was an issue in Cycle 1, online live stream lecture attendance was made compulsory to enable peer interaction, classroom discussion, and student-teacher sharing experiences. As new students had academic writing concerns, the instructor recorded a writing session on APA style. Assignments were received from OUM prior to the course offered; assignment guides were prepared and uploaded on MOODLE. MCQs or open-ended questions for each topic would be discussed in each session. More appealing Video links from YouTube were introduced for practical application of the contents discussed in the classroom. Research Surveys administered to students for feedback for Cycle 1 and Cycle 2 revealed that most of the bachelor's level students were satisfied with live stream lecture strategies. As for strengths and opportunities, most of them noted that online lectures were interactive and enabled active group discussions with a clear understanding and knowledge; the concepts were clarified, giving more knowledge, concentrating on the end without boredom and giving space to exchange ideas and clear doubts. Nevertheless, for some courses, long sessions were bland and therefore required more activities. They were happy with new Websites and technologies introduced in some lessons. Time management was another strength for some courses. The lecturer guided them for online information search with real-life examples as revealed in the reflective journal, student feedback surveys, Zoom meeting, and secondary data analysis. With the findings in two Cycles, the instructor is determined to perform better with online materials and interactive live-stream instruction, which needs further reflection, planning and implementation.

#### **Implications, Recommendations and Conclusions**

This study has implications for online technology use in synchronous and asynchronous interactions and online teaching and learning strategies in higher education programs. Keeping pace with the emerging technology applications demands ongoing professional development and reflective practice for academic staff at higher learning institutions. Amidst COVID 19 lockdown, online instructors need to upgrade themselves with innovative solutions, disseminate best teaching practices for this mode of instruction. In addition, higher learning institutions need to provide personalized faculty support as they design, organize, and conduct their classes. Convergent learning is already in use where some students are in the classroom, while others participate online/remotely in the same synchronous class meeting. Whereas strategies are essential to make the fully online lecture interactive while managing boredom in terms of long day lectures, real-life applications are challenges that should be addressed with innovative solutions.

Keeping pace with the epistemology of education and nature of knowledge implies concepts based learning and constructing new knowledge. It means to strike a balance as instructors amidst trends in learning theories emerging from behaviourist, cognitive, constructivist, elearning and u-learning approaches. It is necessary to balance different teaching and learning strategies as a movement from pedagogy and andragogy to heutagogy. New trends in the field promote the use of simulations and teaching around authenticity and non-lecture based learning. Active learning can take many forms, including cooperative learning, problem-based learning, case methods, simulations, peer instruction, group discussion, self-assessment, think-pair-share, brainstorming, writing and role-playing.

Interactive lectures and concept-based inquiry are the other trends that make traditional lectures more interactive with technology and teaching methods. Interactive lectures include at least one opportunity for students to interact actively and directly with the material through a specific learning task. Inquiry-based learning is a learning and teaching approach that emphasizes students' questions, ideas and observations. Instructors actively encourage students to share their thoughts and to challenge, test and redefine ideas respectfully.

This study has implications for higher education institutions to manage online teachinglearning, time constrains and mode of students' attendance. The findings will be shared with other academics and administration departments of the institute as a part of professional discussion. The student population of the study would benefit from the study, as more attention will be paid on their feedback. Teamwork, ongoing professional development and using innovative strategies are learnt from this research. Emerging from the study are revisiting organizational policies and creating a measurement tool for innovative online teaching, learning and assessment strategies.

Further research is necessary to continue with more innovative online strategies, quality of recorded lectures and other materials. This action research will be continued, applying some of the theories discussed to make lectures more interactive. The study will continue seeking the feedback of students. The researcher needs to be more innovative to address the needs of adult learners who prefer self-regulated independent studies that support them for better performance in their assignments and final examination. More practical applications with real-world scenarios are recommended. In conclusion, emerging from this research is the call

for adult educators to be reflective practitioners with ongoing lifelong learning and understand working adult learners and their needs.

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# Perception and preference for online education among final year undergraduates in selected state universities in western province, Sri Lanka during COVID-19

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#### Abstract

Introduction: The educational institutes across the world are closed due to the COVID-19 pandemic endangering academic schedules. Most educational institutes have shifted to online learning platforms to keep the academic activities going. A descriptive crosssectional study was conducted to identify the perception and preference for online education amona final underardause in selected state universities in Sri Lanka namely the University of Sri Jayewardenepura, University of Colombo, University of Kelaniya, University of Moratuwa, and University of Visual and Performing Arts. Convenient sampling strategy was used. The data collection was carried out through an online survey using a well-structured self-administered questionnaire with close-ended questions. SPSS version 26 was used to analyze the data using Descriptive statistics and Chi-square test. Results show that significant numbers of respondents (91.2%) have used online learning for the first time during the lockdown, majority of the respondents (83.9%) are using smartphones for attending sessions. The majority of respondents (51.4%) have a good perception of online learning. Results of the study indicate that a more comfortable environment was ranked as the major benefit. Data speed (75.8%) was identified as the main bottleneck factor in online learning. Student readiness was the major determinant for the smooth conduct of online classes. Many participants in this research study reported that technological constraints were the main challenges in their online learning experience. The findings highlight that if Sri Lanka wants to move towards online education, it should focus on its internet facilities as a pre-requisite. The online classes will succeed only if all the students have internet access. Minimum technical requirements such as internet connectivity, devices, and software requirements should be fulfilled for an optimal learning experience.

Keywords: Online learning, Perception, Preference, COVID-19

#### Introduction

With the COVID-19 -a novel coronavirus disease spreading across the globe, many countries have closed educational institutes. Educational institutions have come to a functional standstill since they had to protect their students from the virus, which spreads fast in a high student density environment. At the beginning of February 2020, schools only in China and a few other affected countries were closed due to the proliferating contamination. As of 15th

March 2020, colleges, and university closures globally due to the COVID-19 have left one in five students out of school. Even though the lockdown and social distancing are the only ways to slow down the spread of the COVID-19 by breaking the chain of transmission, the closure of educational institutions has affected a large number of students.

As the colleges are shut for an indefinite period, both educational institutions and students are experimenting with ways to complete their prescribed syllabus in the stipulated time frame in line with the academic calendar. These measures have certainly caused a degree of inconvenience, but they have also prompted new innovations including digital interventions. Nevertheless, COVID-19 has been a trigger for educational institutions worldwide to pursue creative approaches at relatively short notice. During this time, most of the universities and colleges have shifted to online mode using Blackboard, Microsoft Teams, Zoom, or other online platforms. The educational institutions in affected areas are seeking stop-gap solutions to continue teaching, but it is important to note that the learning quality depends on the level of digital access and efficiency.

In March 2020, Sri Lankan Government ordered to close all educational institutions, including 15 state universities, and about 40 other state and non-state tertiary educational institutes to minimize the spread of the novel Coronavirus (Fernandez, 2020). However, the major concern is about the quality of learning, which is closely related to how well the content is designed and executed. The effectiveness of learning also depends on how the content is carried out in an online environment and understanding and addressing the constraints faced by students. The study is even more relevant in Sri Lanka because online education has never been tried before at this scale and this is like a massive social experiment. Further, in the higher education sector, the curriculum of nonprofessional colleges gives a lot of importance to nonpractical aspects, and adapting it to an online platform can be a key determinant in terms of effectiveness. In this line, we have examined students' perception and preference regarding online education and various attributes which could make online learning more effective and successful.

General Objective of the study;

! What is learner perception and preference for online education, and what are the failures and benefits of online learning experienced by final year undergraduates in selected state Universities in the Western province, Sri Lanka during the COVID-19 pandemic?

Specific Objectives of the study:

- What do the final year undergraduates in Sri Lankan state universities think about online education during the COVID-19 pandemic?
- ! What is the learner preference for online education among the final year undergraduates in selected state Universities in Sri Lanka during COVID-19 pandemic?
- What are the problems/failures of online education among final year undergraduates in selected state Universities in Sri Lanka during COVID-19 pandemic?
- What are the benefits of online education among final year undergraduates in selected state Universities in Sri Lanka during COVID-19 pandemic?

## **Literature Review**

The current technological advancements allow us to employ several ways to design the online content. It is very important to consider the preferences and perceptions of learners while designing the online courses to make the learning effective and productive. Preference of the learner is related to the readiness or willingness of the learner to participate in collaborative learning and the factors influencing the readiness for online learning.

(Warner, Christie, & Choy, 1998) proposed the concept of readiness for online learning in the Australian vocational education and training sector. They described readiness for online learning mainly in terms of three aspects :(1) the preference of students for the way of delivery as opposed to face-to-face classroom instruction; (2) student's confidence in utilizing the electronic communication for learning which includes competence and trust in the use of the Internet and computer-based communication; and (3) capability to engage in autonomous learning.

Any efforts to strengthen the effectiveness of online learning need to understand the perception of the users. Studies have documented both favorable and unfavorable perceptions by students on online learning. Several studies indicate that the instructor's interaction with students has a considerable impact on the student's perception of online learning. Consistency in course design (Swan, Shea, Fredericksen, Pickett, Pelz, & Maher, 2000), the capability of the interaction with course instructors to promote critical thinking ability and information processing (Hay, Hodgkinson, Peltier, & Drago, 2004) and the rate of interaction in the online setting (Hay, Hodgkinson, Peltier, & Drago, 2004) are important factors for successful online education.

However, several weaknesses related to online learning were also described in the literature. Delay in responses (Vonderwell, 2003), skepticism of their peers' supposed expertise (Petrides, 2002); lack of a sense of community and/or feelings of isolation (Vonderwell, 2003); (Lin & Zane, 2005), problems in collaborating with the co-learners (Lin & Zane, 2005), technical problems (Song, Singleton, Hill, & Koh, 2004), issues related to instructor (Lin & Zane, 2005), higher student attrition rates (Frankola, 2001); (Ryan, 2001); (Laine, 2003), the need for greater discipline, writing skills, and self-motivation; and the need for online users to make a time commitment to learning (Golladay, Prybutok, & Huff, 2000); (Serwatka, 2003); (Lin & Zane, 2005) are considered to be barriers or challenges to online learning.

Determinants of learners' intention to adopt the online classes were proposed using TPB (Theory of Planned Behavior) model. Perceived usefulness (Ong, Lai, & Wang, 2004), perceived ease of use (Venkatesh & Davis, 2000), perceived resources (Mathieson & Chin, 2001); (Oh & Kim, 2003)), intra organizational factors (Igbaria, Guimaraes, Davis, Zinatelli, Cragg, & Cavaye, 1997); such as internal computing support, internal computing training, internal equipment accessibility and extra organizational factors (Igbaria, Guimaraes, Davis, Zinatelli, Cragg, & Cavaye, 1997) such as external computing support, external computing training, external equipment accessibility were identified as the key determinants.

Several researchers compared the efficacy of online or web-based tutorials with conventional teaching in classrooms. The types of possible encounters that might occur online as compared to conventional classrooms differ substantially, and the impact of communicating within one setting or another can have a direct effect on attitudes of the students and faculty. The studies

explored perceptions of online learning experiences vs. conventional classroom experiences by students and faculty and reported mixed findings that demand further studies. Some of those areas include analyzing the nature and amount of interactions that is available online (Moore & Kearsley, 1995), flexibility and accessibility of web - based instructions (Navarro & Shoemaker, 2000) ,the skills, motivations, time and perception of learner and instructor (White, 2004) and whether some or all of these aspects are linked to academic achievement (Brewer & Erikson, 1997). It has also been found that there was no significant difference between online learning and face to face class with regard to their satisfaction (Adams & Umbach, 2012) and also in terms of their academic performance (Nenagh & Rachel, 2014). Studies also supported the fact that online class will be as effective as traditional class if it is designed appropriately (Tuan, 2015).

The literature has highlighted different models which provide the basic framework to understand the students' perception regarding online education. Papers have also highlighted potential bottlenecks for success of the online learning. However, not many papers have attempted to understand the students' perception and preference in Sri Lankan context. It is understandable that only limited number of distance educational institutes used online mode of education before the Covid-19 pandemic. Further, studies on these lines have not yet been attempted in the field of higher education, where online learning initiatives are even lesser probably because of higher share of practical learning aspects in curriculum. We try to fill this gap with our study, drawing insights from the literature in conceptualizing the problem, exclusively focusing our attention on online learning in higher education.

#### Methodology

**Study Setting:** The several degree programs are conducted in many governments and private universities in Sri Lanka. From these, the state universities situated in the Western province were selected for this study. They are the University of Sri Jayewardenepura, University of Colombo, University of Kelaniya, University of Moratuwa, and University of Visual and Performing Arts.

**Study Design:** A descriptive cross-sectional study was carried out.

**Study Population:** The final year undergraduate students from each university were selected using convenient sampling strategy.

**Sample size:** A total of 535 final year undergraduates from the selected universities including 204 students from the University of Sri Jayewardenepura, 105 students from the University of Colombo, 130 students from the University of Kelaniya, 67 students from the University of Moratuwa, and 28 students from the University of Visual & Performing Arts were selected for the study.

**Data Collection Methods:** After obtaining the ethical approval, the participants from different faculties in selected universities were identified first for this online survey. The link for the Google form was sent to the participants through WhatsApp. After submitting their responses, they circulated the questionnaire among other final-year university students in their faculty like snowball sampling. On the last date of data collection, the Google form link was disabled. A Google form was used as it appeared to be the best online tool for data collection while maintaining the social distance during this COVID-19 period.

**Data Analysis:** SPSS (Statistical Package for Social Sciences) version 26 was used data analysis. Descriptive statistics was used for summarizing and presenting data. Data are presented as graphs and charts. The Chi-Square test was used to determine the significance of categorical data.

**Ethical approval:** Ethical approval was obtained from the Ethics Review Committee of the Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka (Ref: Nur/12/20)

# Socio-demographic factors

The Socio-demographic variables included University, Faculty, Age, Gender, and Living Area. The majority of respondents 204 (38.1%) were from the University of Sri Jayewardenepura and 140 (26.2%) were from Art faculties. The mean age of the respondents was 24 years. There were more female respondents 373 (69.7%) than male respondents 162 (30.3%). A majority (n=216, 40,4%) of the respondents belonged to Peri-urban background while 172 (32.1%) were from rural and 147 (27.5%) were from urban areas.

## Basic information regarding online classes

Among all 535 respondents, only 250 (46.7%) had prior experience of online learning, and the majority (53.3%) did not have an online learning experience before. Among 535 respondents, only 47 (8.8%) students said that online classes have already been started by the universities before the COVID-19 pandemic and the majority of respondents 488 (91.2%) said that their colleges started online classes after the COVID-19 pandemic.

## **Results And Discussion**

## Students' preference for online classes

## Technical availability

The majority of respondents (75.1%) said that using WhatsApp was the best way to communicate class updates. The devices preferred by the respondents for attending online classes were smartphone (83.9%), Laptop (11.6%), Desktop (2.6%), and Tablet (1.9%). This suggests that if any organization which wants to develop an application for the online learning, it has to ensure that the platform is compatible with the smartphone. Most of the respondents (60.7%) said they preferred to use a mobile data pack as the source of the internet.

## Structure of online classes

Both live online classes and sending reading material were the most preferred (63.4%) class format. While 22.4% of the respondents preferred live online classes, 8.6% opined in favor of live classes that can be recorded and 3.6% preferred recorded classes that are uploaded at university website/YouTube/any other application and 2.1% preferred sending reading materials. Regarding the nature of reading materials, majority of the respondents (82.4%) preferred video content supplemented with reading materials. 208 (38.9%) of the respondents preferred the instructor to teach using PowerPoint presentations.

#### Frequency and duration of online classes

379 (70.8%) of the learners wanted online classes as per the schedule to complete the syllabus with 59.3 % respondents preferring one-hour duration for each class. More than half of the respondents (57.8%) desired to spend only two to four hours a day for an online class and 293 (54.8%) respondents wanted a break of 15 minutes in between the two classes.

#### Addressing the queries

The majority of respondents 169 (31.6%) preferred a way for clarifying the queries and they preferred chat. Interestingly, 41.3 % of the respondents expect the instructor to clarify their doubts within the next class.

#### Plans and Criteria for Evaluation

Majority of the students preferred quizzes (73.6 %) and assignments (70.3%) at the end of every class for effective learning. Around 66.5% of the respondents felt that one week should be given for submitting their assignments. Surprisingly, 60.9 % of the respondents wished to attend online exams.

Students' perception towards online learning

The majority (47.7%) of the respondents agreed with the distinctive feature of online learning which says that online learning provides an opportunity to learn in your place. The majority (49.2%) of the respondents agreed with the cost-effective and time-saving feature of online learning. The majority of respondents (45.8%) had given their agreement to the statement which says that online learning can enable people to study; irrespective of where they are located in the world. A majority (42.2%) of the respondents agreed with the statement that online learning demands more self-discipline and self-motivation to learn effectively. A majority (45.4%) of the respondents have given their agreement to the statement that says, studying through an online learning model provides the flexibility to study at the time convenient to the learner. 30.3% of the respondents are neutral regarding the same statement.

The total score was calculated for the above five statements using the five-point Likert scale. 76.18% (SD=13.19) was the mean value in the total perception percentage of students. The maximum perception score was 100% and the minimum perception score was 24%.

Categorization of Perception	No. (n=535)	Percentage (%)
Positive perception (>76.18%)	275	51.4
Negative perception (<76.18%)	260	48.6

**Table 1.** Final year undergraduates' perception categorization (N=535)

Association between Socio-de mographic factors with students learning

Significant associations were evident between university, faculty, age, gender, and living area with the students' perception towards online learning. (Table 2).

University and Students' Perception towards Or

In this study, the majority of students in the University of Visual and performing arts (75%), University of Kelaniya (69.2%), and University of Moratuwa (56.7%) have positive perception towards online learning. Students at the University of Sri Jayewardenepura (63.4%) and University of Colombo (51.4%) have negative perceptions towards online learning. The present study found that there is a significant relationship between University and Students' Perception of Online learning (p<0.05).

Faculty and Students' Perception towards Onlin

In the present study, positive perception was present in those students who are in the Faculty of Music (83.3%), Faculty of Information Technology (80.0%), Faculty of Visual Arts (73.3%), Faculty of Dance and Drama (71.4%), Faculty of management (60.8%), Faculty of medicine (54.4%), Faculty of Science (52.1%) and Faculty of Engineering (50.8%). Negative perception was present in those students who are in the Faculty of Allied Health Science (60.3%) and Faculty of Arts (58.9%). The present study found that there is no relationship between Faculty and Students' Perception of Online learning (p=0.05).

Age and St u d e n t s' Perception towards Online learning In this study positive perception was present in >26 age category (76.1%), 25 age category (61.9%), 26 age category (60.7%) and 24 age category (55%). The negative perception was present in the students who are in the <24 age category (69.9%). The present study found that there is a significant relationship between age and students' perception of online learning (p<0.05).

Gender and Students' Perception towards Online

In the present study, the majority of male students (70.4%) had positive perception and the majority of female students (56.8%) held negative perception towards online learning. This study found that there is a significant relationship between gender and students' perception about online learning.

Living Area and Students' Perception towards

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In this study majority of students in the rural area (57.6%) and peri-urban area (51.4%) had positive perception and a majority of urban area students (55.8%) held negative perception towards online learning. This study found that there is no significant relationship between living area and students' perception towards online learning.

students perception	
Variable	P-Value
University	0.000
Faculty	0.005
Age	0.000
Gender	0.000
Living Area	0.059

**Table 2.** Association between Socio-demographic factors with online education and

#### Benefits of Online Learning

Results of the study indicate that a more comfortable environment (46.5%) was ranked as the major benefit of online learning. Flexible schedule and convenience (21.8%), improving technical skills (12.3%), self-discipline and responsibility (10.4%) and more interaction and greater ability to concentrate (9%) were ranked as the second, third, fourth and fifth benefit of online learning respectively. In this study, the majority of students in the University of Colombo (69.4%) said that more comfortable environment is the major benefit of online education. But majority of students at the University of Sri Jayewardenepura (57.4%) said flexible schedule and convenience is the major benefit of online learning. Online education offers students the opportunity to study at their own pace and time of their convenience. Majority of female students (65%) ranked more comfortable environment as the major benefit of online environment as the major benefit of online learning.

## Bottlenecks in online learning

Data speed (28.2%), data limit (25.3%), lack of connectivity (21.1%), lack of device (11.3%), difficulty in online assessments/exams (9.2%), little/no face-to-face interaction (2.5%), poor learning environment (1.2%), intense requirement for self-discipline (0.5%), and technophobia (0.2%) were identified as challenges to online education. Majority of students (78.9%) from the University of Sri Jayewardenepura ranked data speed as the major bottleneck factor for online education. Majority of male students (73.1%) ranked data speed as the major issue in online education. 89.1% of students living in rural areas ranked data speed as the major barrier for online learning. This finding highlights the Sri Lanka's digital divide and lack of equity in access to uninterrupted internet. These give us an insight that if any country wants to move towards online education, stable internet is a pre-requisite. Poor interaction is also a major concern along with those mentioned above in conducting online classes.

## Factors affecting the success of online classes

The majority of the respondents opined that student readiness (31.1%) and the nature of content (30.1%) were the major determinants for the smooth conduct of online classes. Competency of the instructor (28.5%), infrastructure (6.2%) and follow up (4.1%) were respectively ranked as the third, fourth and fifth factors affecting the success of online classes. Majority of students in the University of Sri Jayewardenepura (49.1%), University of Kelaniya (47.2%), and University of Moratuwa (45.7%) ranked student reediness as the major factor for affecting the success of online classes. But more students in University of Visual and performing Arts (65.3%) and University of Colombo (54%) ranked the nature of content were the major determinant for the smooth conduct of online classes. 65.4% of female students said that student readiness affects the success of online classes. The course instructor should spend time designing the content which should be well structured, concise, interactive, and relevant. The students should be able to record the classes as such content can be accessed at any time based on their convenience. The recording will also come in handy for those students who have internet connectivity issues.

## Factors that could lead to failure of online classes

Technological constraints were identified as the biggest challenge to successful online education (80.9%). Many participants in this research study reported that learner's inefficacy (10.4%), instructor's incompetency (5.8%), distractions (2.2%), and health issues (0.7%) were respectively ranked as the second, third, fourth and fifth challenges to their online learning experience. Majority of students in all universities; University of Sri Jayewardenepura (75.%), University of Colombo (72.1%), University of Kelaniya (68.2%), University of Moratuwa (56.8%), and University of Visual and Performing Arts (55%) ranked technological constraints as the major challenge for online education. Both female (68.2%) and male (55.3%) students ranked technological constraints as the factors that could lead to failure of online classes. Lack of internet access will exclude some of the learners from the online classes. Slow connections can also make accessing course platforms and materials frustrating. Online classes will be successful only if a stable and affordable internet facility is provided to all.

#### Conclusions

The findings of this study indicated that the majority of the students held positive attitude towards online classes in the wake of COVID 19. Online learning was found to be advantageous as it provided a more comfortable environment for the learners. The findings highlight that if Sri Lanka wants to move towards online education, stable internet facility to all the students is a pre-requisite. Minimum technical requirements such as internet connectivity, devices, and software requirements should be fulfilled for an optimal learning experience.

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# Action Research to Improve Interaction between Students and Lecturer in Virtual Student Induction Programme Through a Flipped Lecture Approach

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#### Abstract

workshop "Student Induction I followed a 5-d a y o n Values" in early Human December 2020 and Ι with the fresh undergraduates who enlisted at the end of December 2020 to the university. There were four major challenges namely, the students were at home as it was a university closure period, and secondly the students visited the university only on the day they enlisted; therefore have seen the wе not S Programme conducted based Universal Human o n me. Fourthly, I had to conduct Student Induction Programme in virtual platform although it was originally designed to conduct in face-to face mode. Therefore, after obtaining the approval to conduct this course, I conducted the Student Induction Programme in virtual platform. I wanted to investigate the effectiveness of the approaches that I used in online Student Induction Programme by reflecting the approaches that I used. It was the first time in the university that we conducted a Student Induction Programme in virtual platform. The research timeline of this study covers three months from mid December 2020 to mid March, 2021. At the end of the Student Induction programme, I conducted semi-structured interviews with the students, and it helped me to reflect my own teaching approach which I used to improve interaction between students and the lecturer. I found that they were really satisfied with the approach that I used to improve their interaction while conducting the virtual Student Induction Programme. It was identified that new approaches can be used in conducting online Student Induction Programme to improve the interaction between students and lecturer.

Keywords: Universal Human Values, Student Induction, Interaction

# Introduction

Mankind has progressed a lot related to skills. Students clearing a difficult exam like G.C.E. A/L's is a proof. Such skilled students working and creating new technology is a further proof. But there is a lack of understanding of values. What can be done regarding it? How do we get the students to think about what can be done? (R. Sangal, et al., 2019)

There is a need to inculcate universal human values in the future generation of the students to improve the quality of life. Hence, I wanted to conduct a Student Induction Programme for the students, which goes beyond the traditional Student Induction Programmes. The particular

Student Induction Programme I discuss here was developed to enhance universal human values of the students. The challenge to me was to conduct this programme in remote mode even though it was originally designed to be delivered in physical mode.

This is my story about "How I improved the interaction between students and the lecturer during the virtual Student Induction Programme." This article reports the approaches which can be used to improve the interaction in virtual Student Induction Programme conducted based on Universal Human Values.

It was unexpected that the second wave of Covid-19 forced us to close the universities for the second time as well. However, there was a need to carry out the academic work of undergraduates without any disruptions. Hence, there was no any other provision to conduct the Student Induction Programme to the undergraduates in online mode. It was new to the university. So I voluntarily accepted to conduct a Student Induction Programme for 16 students who enrolled to a newly introduced degree programme offered by the Department of Aeronautical Engineering. As they were a new batch of students who have never studied with us, I wanted to groom them throughout their first semester in the university. Even though, I planned a face-to- face session, I had to convert it to an online session as the students were at home due to the closure of the university due to the Covid 19 pandemic. The objective of this action research was to improve the interaction between students and the lecturer while following the virtual Student Induction Programme.

#### **Literature Review**

**Overview of Action Research:** Kurt Lewin, is the person credited for introducing the term "Acton Research" (Ferrance, 2000). The Figure 01 below illustrates the diagram of Lewin's spiral steps for Action Research.



Figure 01. Diagram of Lewin's Spiral Steps for Action Research (Smith, 1996)

As shown in Figure 01, there are steps in the Action Research in a spiral shape such as identify general idea, find the fact, planning, taking first action steps, evaluating the steps taken, altering plan and taking second steps. It is a cycle of reflection and action which directly inform understanding of which practices and actions have better effects. This ensures a good chance of introducing a positive change.

According to Ferrance (2000), a teacher conducting an action research starts a cycle by posing questions, collecting data, reflecting and deciding on a course of action. The six steps in the Action Research Cycle consist of identifying and establishing the problem, gathering and grouping information, analyzing and evaluating information, changing lecturing practice based on the analysis of the information, reflecting and then restarting the cycle all over again. In recognizing and establishing the problem, the lecturer needs to make sure that he or she identifies the problem that he or she is experiencing in the lecture. As the second step, the lecturer must ensure that several sources of information are gathered to solve the problem that he or she has encountered. The next step is to identify and analyze major themes of the data. This can be done after making a plan for the change in one component in the lecturing process. While the change is being implemented, observations should be carried out to collect information to assess the impact of the change. Then the reflection step starts. Accordingly, it is necessary to determine if there is an improvement occurred due to the change introduced. If the data does not address the problem identified at the initial step, then the same process needs to be repeated by alternating the plan of action. I have been using this approach throughout this action research to improve the interaction between the students and the lecturer during the online Student Induction Programme which was delivered to inculcate Universal Human Values in students. The universal human values open the space for the students to explore his/her role in all aspects of life as an individual, as a member of a family or society and as a unit in nature. This helps students to self-explore themselves and also they are able to discover their intrinsic values. Further, they could become better citizens, better family members, better friends, good students to their teachers, good employees to their institution, and finally a good member to the society in general (R. Sangal, et al., 2019).

## Methodology

**Participants:** The participants were the first batch consisting of 16 undergraduates in the age range of 24 and 25 and there were 12 boys and 4 girls in BSc in Aircraft Maintenance degree programme. The students were following a split degree programme with General Sir John Kotelawala Defense University (KDU) and Sri Lankan Aviation College (SLAC) of Sri Lankan Airlines Ltd. Before the students enlisted in KDU, they used to complete their first two academic years at SLAC and come to KDU for their third academic year. They started their third academic year in 2020/2021 with our university.

**Researcher's Role:** I was supposed to conduct a module for the students apart from being the research supervisor for 8 students in the batch. After starting the lectures for the module, I felt that the students should go through a Student Induction Programme as they are new to the university. As the university was closed due to Covid 19, we could not have a physical student induction programme. Further, as the students were from a split degree programme, we were unable to get them to the common Student Induction programme that the university offers to the first year students. Therefore, as these students were attached to our department for their studies, I voluntarily conducted a course on Student Induction programme designed based on Universal Human Values for 16 students after obtaining the approval from the university. It

was my first experience that I conducted a Student Induction Programme in a virtual platform. Similarly, it was the first experience for the university too.

#### **Process:**



Figure 02. Process of Action Research for online Student Induction Programme

This process described in figure 02 was introduced by Kemmis, S. & McTaggart, R (1988) and I applied that model in my research work with necessary modifications as shown in figure 02.

The action plan for this research is shown in Figure 02. It consisted of two cycles. During the first cycle, it was observed that the interaction of the students with the lecturer was very low even though this particular course required higher interaction with the lecturer as this is a Student Induction programme. I decided to use "Dotstorming" wall to publish some questions related to the lesson of the following week. Therefore, always the questions were published on the "Dotstorming" wall prior to the online lesson. Then, the students were notified to publish their answers on the Dotstorming wall prior to the lesson. I observed that majority of the students published their answers, and two - three students did not publish their answers on the "Dotstorming" wall. Therefore, I decided to revise the plan to motivate the students who did not publish their answers on the "Dotstorming" wall.

As shown in figure 2, the cycle 2 consisted of the revised plan. Apart from publishing the answers on the "Dotstorming" wall by the students, an online discussion was carried out based on the answers given by the students on the "Dotstorming" wall. The discussion started by allowing the students to read out their answers loudly during the online discussion. This action helped the students to interact with the other classmates as all the students got a chance to read and elaborate their answers to the whole class. Therefore, this approach created a new avenue for the students to actively interact with the peers and the lecturer during the online discussion session. Hence, high level of interaction was found with this new approach.

**Type of data:** The feedback about the newly introduced approach was obtained through semistructured interviews conducted at the end of the session, once in every two weeks.

#### **Results and Discussion**

It was found that when the questions were given prior to the online discussion in the Student Induction Programme, the students attempted to publish answers before the online lecture started as the "Dotstorming" wall indicated the names of the students who responded. Therefore, the students attempted to publish their answers. In addition, during the 2nd cycle, the online discussion started after giving a chance to the students to read out their answers to the class. Therefore, students were very keen to publish their answers on the "Dotstorming" wall as everybody got a chance to read and discuss their answers. According to the students, it was very encouraging that the lecturer initiated the online discussion based on the answers given by the students and not based on the notes of the lecturer. Further, the students were very much satisfied to use a new brainstorming software namely "Dotstorming" as it was a new experience in learning. Further, the software helped the students to display their answers to the whole class, and this ensured an effective learning experience.

#### **Implications and Conclusions**

*Implications for practice:* As the session was the student Induction programme it was harder to maintain interaction throughout the online session. However, the new approach (Figure 2) ensured a better interaction as it involved in sharing ideas through "Dotstorming" tool. More importantly, the discussion was based on the answers they students have given. Therefore, it was easy to easy to develop interaction even though the session was conducted virtually.

*Recommendations and future research:* The approach explained in Figure 2 can be used in online lectures as well to improve the interaction between students and the lecturer as interaction, one of the most important aspects in a lecture, is usually difficult in virtual platforms.

*Disseminating your findings:* The new approach can be used in the future as it showed better outcome. Even storytelling can be incorporated into the online discussions to inculcate good attitudes such as collaboration and corporation but not competition.

*Lessons learnt:* In conclusion, it was found that the use of "Dotstorming" helped to enhance the interaction between students and the lecturer, which is really important in online teaching.

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# Action Research of Approaches Used to Improve Student-Content Learning Tasks of Undergraduates Through "Take-Home Teaching Tools" Strategies

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#### Abstract

Teaching and learning approaches have a vital role in education sector and those strategies (approaches) are far more crucial when it comes to virtual teaching and learning. It was experienced that the interaction between students-students and students with the lecturer was very poor in distance learning mechanism. Therefore, it was decided *to c h a n g e* the study patterns 0 f thehosmteu"dents activities using case studies. The aim of this action research is to identify the approaches used to improve learning ta-belame of eaa, buse ngrtada it is important to enhance the interaction between student and content in distance learning. The action research process was developed, and it had to have two cycles for "KWL" table and SQ4R system. S t predbarenast per were g given in "KWL" table, guidelines however, i t for the questions raised by the author. The observations were traced based on the questions raised by the author during the online lecture in the following week. As a next step, i t was decided tо review t-dhapeh steepslan t o which act as a guideline to make a better interaction between the student and content. The same reading material (case study article) was given to students along with the systehmomæs" at a š KrakeAt "SQ4R" the following we repeated by asking the questions from all the students based on the reading comprehension (case study article). It was observed that all 9 students performed well compared to the previous method. Hence, it was concluded that this teaching and learning process enabled students to improve their learning tasks through reflection due to this tool". particu-**hom**e"**tækae**hing Ιt corategylis also b important in improving the interaction between student and content in distance education. In addition to that the results obtained at the end of this research proved that changing the learning pattern of learners by the lecturer was far more effective rather than changing t-Hhoemel"ecotoutrievrist.ie"sTapkleay a major

Keywords: Action research, Higher education, KWL table, Online, SQ4R system

# Introduction

"It has more impact on educational effectivent teac K(Gabbss 2014). Action research shifts from contemporary educational strategies to novel educational strategies to bring an effective change to students learning. The action researchers explore the issues encountered in everyday practices and work to bring about changes to teaching mechanisms. When considering how to get students to learn more, they usually think about changing teaching or assessment methods or changing the curricula. As per the literature (Gibbs, 2014), it was stated that there is a better chance of improving learning by changing the students learning strategy, which means that the lecturers could change how teaching is conducted and this will indirectly effect on how students learn. Furthermore, it was identified that the best way to change how students learn is to change students themselves which enable them to do different things with what is available in front of them when they go about their learning (Gibbs, 2014). Case studies were used as a teaching tool in online classes as it could enhance self-learning of the students. In addition to that, it also provides an opportunity for the students to study the real time applications of the theories that they have learnt from the module. Furthermore, take-home activities related to the module pave the path for the students to keep occupied effectively while self-reflecting during university closure. It was observed that the students had not actively read the case studies, which were assigned to them which is relevant to their lesson. Case studies were introduced during the online lecturing period to the students with an intention to allow them to spend more "time on task", which enabled them to self-reflect what they have learnt in the online lecture. The research question of this study was, whether can we use "take-home activities" as a tool to improve learning tasks of the undergraduates? The objective of this action research was to identify the approaches used to improve learning tasks of undergraduates through "take-home teaching tools".

#### **Literature Review**

As per figure 01 shown below, it was evident that there are different modes of interaction in educational contexts between and among students, teachers and the content which is to be learnt Anderson (2003a). As per Anderson (2003a), there are three forms of interaction namely, student-student, student-teacher and student-content. The formal education system facilitates the student-content interaction. However, in higher education sector, student-content interaction is very much important.

According to Biggs et al. (2001) there are two categories of students related to learning approaches. The first category of students commence their learning tasks as per their preferences, abilities and their prior knowledge i.e. what they have already know related to that learning task. The second category of the students require the teacher to design the students' learning tasks in alignment with the course objectives and the types of the assessments. As per Biggs et al. (2001) both of these categories have an impact towards students' learning tasks. Further, as per Biggs and Tang (2011) students can take either a surface or deep approach in learning task. The students practicing surface approach are more concerned with getting the leaning task out of the way promptly to do the task with less effort whereas the deep learners seek to understand the ideas in context, and they also try to apply what they learnt in to practice, which is an inherent quality of critical thinkers. (Biggs and Tang 2011).



Figure 1. Modes of interaction in distance education from Anderson (2003a)

When it comes to action research it is "Kurt Lewin" who is credited for introducing the term "Acton Research" (Ferrance, 2000). The Figure 02 below illustrates the diagram of Lewin's spiral steps for Action Research.



Figure 2. Diagram of Lewin's Spiral Steps for Action Research (Smith, 1996)

As Figure 02 illustrates, there are steps in the Action Research in a spiral shape. Namely, identify general idea, fact finding, planning, take first action steps, evaluate, alter plan, and take second steps. It is a cycle of reflection and action which directly informs understanding of which practices and actions are effective.

#### Methodology

**Participants:** The study was carried out for a small group of students who are following an Engineering degree. There are 09 undergraduates from 3<sup>rd</sup> year in the university. It is a multicultural group of students as there is one student from each of the countries Zambia, Tanzania, Ruwanda, whereas the rest of the students are locals. The author conducts the sessions during the period in which the research was carried out.

**Researcher's role and the process:** I am the lecturer who is teaching this group of students in virtual mode. In this action research, I am sharing the approaches that I have been using to improve learning tasks of undergraduates through "take-home teaching step-tools". As this lecture series is conducted via distance learning mechanism and the students are in 3<sup>rd</sup> year in the university, I wanted to improve their self-reflection capabilities to give a better learning experience through "take-home teaching" strategy. The students are used to being at home all the time and following lectures online since last couple of months. Therefore, I wanted to engage the students with self-reflection practices to keep them occupied with the subject materials. On the other hand, it is vital to improve active reading capability among undergraduates in the process of exploring knowledge. As shown in figure 03, the first action was taken to introduce "KWL" table along with the reading material for the students given as a reading comprehension to be done at home. The "KWL" table is an effective way to reflect on their own practices and also it is helpful for students when organizing their own knowledge (Gibbs, 2014). The terms "KWL" stands for "What I already <u>know?</u>", "What I <u>w</u>ant to know?" and "What I have leant?" (Gibbs, 2014). In the following week, few questions were raised based on the reading comprehension given to the students to identify how far the students were successful in active reading. As it was realized that some of the students in the lecture were not successful in the learning task given, I decided to revise the plan and introduce "SQ4R" reading system along with the same reading material to give a better active reading experience to the students, as it was also facilitated to occupy the students in the learning tasks through this particular "take-home teaching tool".

The steps of cycle 2 in figure 03 started with a plan to introduce "SQ4R", reading system to overcome the pitfalls in the previous process. The "SQ4R", consists with several steps namely, <u>S</u>urvey (skim/scan), <u>Q</u>uestions (what to find out?), <u>R</u>eading (Proceed to read), <u>R</u>ecording (what should I write?), <u>R</u>eciting (what was less clear?) and <u>R</u>eviewing (did I miss any? / Post-reading checking) (Gibbs, 2014). In the action stage, "SQ4R" reading system was introduced along with the same reading material which was given in the previous week. In the following week, observation step was carried out in cycle 2.

After raising the questions from all the students based on the reading material given, it was observed that the students were well equipped with the facts in the reading material. Therefore, it was reflected that implementing of "SQ4R" reading system was quite effective to improve learning tasks of undergraduates in distance teaching and learning mechanism.



Figure 3. Process of Action Research practiced to improve learning tasks of undergraduates through "take-home teaching" strategies

**Type of data:** The data was recorded based on the questions raised from the students from the reading comprehension given to the students at the previous week during the virtual lecture, to be done at home as a "take-home" learning task. The comprehension questions which were asked by me from the students were: "What was the case study about?", "What was the given issue?", "How did they analyze it"? "What were the limitations that they encountered?", "What is the method that they have used to rectify the issue?", "How successful were they?", "Explain how you would tackle a similar issue if you came across such an issue", "Give reasons for your chosen method". etc. I used to ask 10 - 12 questions as the total number of students were 9. This gave an opportunity to each and every student to answer at least one question.

When the students were answering, I noted down the answers in a paper along with their names to identify who has not answered the raised questions. If I found any student who did not answer at least a single question, I used to call upon his/her name and asked the question from that student, otherwise answering for questions was carried out randomly.

## **Results and Discussion**

After implementing "KWL" table during the 1<sup>st</sup> cycle in the action research process, it was observed that only 4 students responded for the questions which made me to revise the plan and introduce "SQ4R" reading system to the students. However, it was observed that after implementation of "SQ4R" at the 2<sup>nd</sup> cycle of the action research process, showed better performances as it was observed that the students were far better in answering to the questions raised. All the 9 students responded to the questions in a descriptive manner. It is evident that they had done the learning task effectively compared with the 1<sup>st</sup> cycle. Further, it enabled students to improve their learning tasks through reflection with this "take-home teaching tool", which is also important in improving student-content interaction in distance education as suggested by Anderson (2003). When it comes to improving effectiveness in education, it is more impactful to change learning patters rather than changing the teachers.
## **Implications and Conclusions**

*Implications for practice:* As this was a novel practice in my teaching strategy, it took a few days for me to design the activity.

**Recommendations and future research:** The suggested approach can be used for small group lectures specially when the lecturer needs to occupy the student during the offline lecture times.

**Disseminating your findings:** The practiced new approach could be used to improve learning tasks of undergraduates through "take-home teaching step-tools" such as "KWL" table and "SQ4R" system.

*Lessons learnt:* The practiced new strategy of "take-home teaching step-tools" with "KWL" table and "SQ4R" system can be used to enhance learning tasks of undergraduates during distance teaching.

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# Integration of Collaborative Learning for Online Delivery of Studiobased Group Projects: Lessons from Action Research Conducted during COVID-19 Pandemic

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#### Abstract

Despite its frequent application in the global platform, online teaching and learning are used minimum in the Sri Lankan context, as face-to-face interactions are often prioritised. Due to the COVID-19 pandemic, a significant part of modules was conducted online, where field-based studio projects face challenges in meeting learning outcomes due to limited resources. Regional Planning & Design Studio (RPDS) is a design-based practical module that requires students to work in groups, conduct field visits and design a regional scale development plan for a selected locality in Sri Lanka. For the first time in the academic history in the Department of Town & Country Planning, University of Moratuwa, RPDS was conducted via online mode in 2020, emphasising collaborative learning with weekly tasks for every staff and student in delivery of expected outcomes. Action research cyclic process was applied to evaluate the teaching and learning activities in the module to test the effectiveness of adopted techniques. The project involved two key phases; the Analysis phase (Cycle 1) and the Plan Preparation phase (Cycle 2), where action steps initiated at the beginning of the module were reviewed at the end of Cycle 1 for the improvement in Cycle 2. Skills and knowledge of students were assessed as a response to the action research components used in the RPDS. The experiment gave a new experience and learning curve based on the post feedback obtained from students and staff as the cognitive skills, individual responsibility and teamwork skills of students were assessed. *Conducting a fieldwork-based module through online platform is a challenging strategy,* but the restrictions imposed by pandemic proved the key learning points to consider in such situation. Extensive pre planning requirements, flexibility in learning activities, assessment of skills and knowledge and exposure to multidisciplinary expert knowledge were key important areas in future planning of such modules. Collaborative learning process was an effective approach to achieve the learning outcomes in the module. The action research application is a useful tool to meet the teaching and learning goals of the undergraduate degree programs in the context of technology induced pedagogy.

Key words: Online Delivery, Collaborative Learning, Field based Studio Project

#### Introduction

Regional Planning & Design Studio (RPDS) is a core module in the curriculum of Bachelor of Science Honors in Town & Country Planning degree program at University of Moratuwa which

comprised of 7 credits with extensive group-based student activities scheduled in a span of 8 weeks, RPDS is introduced in level 3 (Semester 5) where planning practices of regional scale must be tested through the intervention of stakeholders and real ground situation. The students are required to complete a development plan in regional scale (provincial spatial boundary) (NPPD, 2021) by forming into groups of 15 or more students. Staff members (10) are assigned to coordinate and evaluate students and their tasks on weekly basis throughout the period. Due to COVID-19 pandemic induced restrictions, the module was decided to conduct through online teaching and learning mode, in 2020. The challenges for conducting the module were threefold: first to complete the module without field reconnaissance and primary data collection surveys, second to miss the face-to-face stakeholder interactions in different phases of the planning work, and third was the students to miss studio work and group activities which are essential components of the learning process. To overcome the challenges and to meet the learning outcomes of the module, it was decided to update the teaching and learning activities with the prioritisation of collaborative learning methods in the RPDS program. Generally, RPDS comprised of two key stages namely: Analysis Stage and Plan Making Stage. Action research was conducted to assess the module delivery in each stage. Stage 1 was contemplated as cycle 1 and stage 2 as cycle 2 of action research process.

Due to the nature of group activities in the module, students were assigned with the collaborative learning to meet the given deadlines stipulated for each week. Delivery mode and timeline of outputs were selected based on students' capacity, resource availability and the required level of depth in detailing. The module took 16 weeks (originally planned for 8 weeks) to complete along with additional workload with day and night discussion forums. Feedback from both the staff and students were obtained during different stages of the work to evaluate the effects of collaborative learning and assessment tasks. The staff members have assessed the students on their thinking ability, innovative and creativeness, performance in the team and level of understanding showed in completing the assigned tasks. Before commencement of the module, a survey has been conducted to understand the problems associated with student life at their homes to better understand the constraints associated with learning environment due to COVID-19 pandemic. The result of the survey is as shown in Figure 1.



Figure 1. Problems faced by students due to COVID-19 pandemic

According to Figure 1, 39% of students faced problems in accessing internet while 37% faced socio economic problems. Therefore, the program was a challenge considering the mental and physical barriers to focus upon online delivery of RPDS. At the same time, this was identified as an opportunity to involve students in collaborative learning to support each other in various capacities and it turns out to be a showcase of an independent learning and collaborative learning experience for students.

The module delivery method was amended to suit the condition of the students and resource allocation for RPDS. The key barriers faced during the process and steps taken to manage the situation can be shown in Table 1.

Challenge	Adopted Action	Remarks
Conducting Field based Surveys	Use of secondary databases and online discussions	No field visits allowed due to travel restrictions
Expert Opinion Surveys and Stakeholder Consultation	Online discussions with local and international professionals in the field	Due to unavailability of experts and technical difficulties, selection of experts was difficult
Lack of Technical Equipment for Mapping Tasks	Open access databases and software used	Collaboration among students for shared work
Access to online resources and data charges	Students were encouraged to use Learning Management System (LMS) via available devices	Government introduced free data services for selected web services by the university network

Table 1. Challenges encountered in completing the online mode and adopted actions.

According to table 01, number of initiatives were taken to assist the student learning and teachers were adopted into LMS based teaching during the RPDS. In this context, an evaluation of effectiveness of the online learning was needed as students were uncertain on the grades which could be determined by the technical factors such as access to online resources. Therefore, this study was carried out to assess the level of achievement by the program with respect to objectives of the module. The specific objectives intended to answer through the action research study were:

To understand the challenges associated with online delivery of RPDS. To assess the effectiveness of collaborative learning as a process to undertake studiobased design projects.

While challenges of online delivery as stated in Table 01 were tackled by various other means, improving collaboration among students and staff was the next challenge in completing the module. Action research process was followed to understand the application of 03 components of collaborative learning theories as identified by Gjergo and Samarxhiu (2011):

- ! Cognitive Approach
- ! Constructivism Approach
- ! Motivational Approach

Different teaching, learning and assessment methods were introduced to suit the collaborative learning during the stage 1 of the project (Cycle 1) and the collaborative learning approaches were reviewed through feedback at the end of cycle 1. Stage 2 of the project was completed with the updated collaborative techniques to test the effects of changes which considered as cycle 2 of the action research. Upon review of cycle 1 and cycle 2, study objectives were achieved, and recommendations were generated to plan online delivery of studio-based project modules in future. The results cannot be generalised for every module with similar nature and unique to the RPDS. With the experience from this work would help better plan and prepare teaching, learning and assessment process of such modules where collaborative learning process can be a useful approach to follow.

## **Literature Review**

Online teaching has been a common practice caused by the travel restrictions imposed by COVID-19 pandemic. Undertaking field work-based design studio projects was one of the key challenges faced by universities under the "New Normal" situation. With modern technologybased applications used in the teaching and learning process, teachers must look for innovative practices to engage students to achieve the learning outcomes of the modules. Conducting practice-based and studio-oriented modules without face-to-face interaction demands serious planning, implementation, and evaluation of student learning in the process (Oktavianto, Utava, & Tarvana, 2021). Since students face numerous socio economic and technical problems due to COVID-19 pandemic, pedagogical practices were amended with collaborative and blended learning practices to improve the student participation and results. Collaborative learning is increasingly popular among universities today and online teaching has been improved to promote more flexible environments to teaching. It is known that blended learning-based technology tools are stimulating the cognition and critical thinking ability of students (Kenney & Newcombe, 2011). Collaborative learning is built upon the model that a community or group of people get together in solving a common problem where each other are accountable in achieving a consensus (Gjergo & Samarxhiu, 2011).

According to Gaillet (1994), teachers must move into periphery and allow student-centered learning as students need the freedom to learn from each other. Since students in universities form their own informal groups to learn the academic matters, this concept is not new to universities. But application of such practice in online mode, during a pandemic driven travel restrictions would require a different level of attention in achieving the goals of teaching. Online collaborative learning requires groups of students to interact and conclude in subject matter within a stipulated time and quality. To do this, the size and composition of student groups, well-structured learning activities and provision of sufficient assistance for the interaction via online modes are essential (Roberts, 2004). Collaborative learning process can incorporate collaborative teaching as well where teachers are formed into communication subgroups to assist each of the student groups. The learning activities can range from group brainstorming sessions, writing tasks, debates, and study groups (Gjergo & Samarxhiu, 2011). Fundamental principles determine the effectiveness of collaborative learning can be the

communication and mutual trust between students as well as between the teachers and students.

Cognitive approach in collaborative learning means the knowledge retained and comprehend through conceptual framework. The conceptual framework can be well established through small group settings as students get the opportunity to showcase the conceptualisation through rehearsal (Gjergo & Samarxhiu, 2011). Social constructivism explains that new knowledge will be created through social discourse of the subject matter (Bruffee, 1992). According to MacGregor (1990), successive conversations in changing socio-political environments create new knowledge. Motivational theories explain the factors which make students motivated for the learning process. Individual and group assessment components have encouraged the students not only to learn but also to bring together as a group by cooperation and dissemination of knowledge among each other (Gjergo & Samarxhiu, 2011). The assessment components should not only focus upon project-based outputs, but overall outcomes as identified to improve the knowledge, skills and attitudes of the students in the undergraduate level.

## Methodology

The action research process followed key elements as suggested by McNiff (2016) as i) Plan, ii) Action, iii) Review and iv) Validate the results. By understanding the student composition, the hardware and software requirements, socio-economic status and expected outcomes of the RPDS module, a customised plan was formed to conduct the module via an online platform. Forty-six (46) students in the class were categorised into subgroups to conduct Stage 1: Analysis (4 groups) and stage 2: Plan Formulation (3 groups) with weekly deliverables assigned. Ten (10) staff members were divided among each group, and independent mentoring was provided to each sub-group while students were given flexible hours to meet and discuss project matters.

The RPDS project flow during traditional face-to-face classroom was modified to suit the online platform requirements, but the overall composition of groups and deliverables were kept the same in Stage 1. Once Stage 1 was completed, the student and staff feedback were obtained to assess the performance, and the teaching-learning and assessment strategy were modified in Stage 2. At the end of Stage 2, feedback was obtained again to evaluate the effectiveness of the change in the module. The action research flow is shown in Figure 2.

Eventhough two Cycles were adopted in the action research process (Figure 2), the tasks conducted during the two Stages were different. The feedback and assessments used for the Action research were based on the collaborative learning outcomes, identified as cognition, constructivism, and motivation aspects within the students. The evaluations targeted student motivation and self-esteem as well as academic progress assessments (Slavin, 1994). The key skills assessed in each cycle were intellectual, practical, analytical, communication, interpersonal and teamwork, and self-management and motivational skills. A qualitative assessment through feedback surveys was conducted to validate the results and components of the action research.

The actual process flow of RPDS, followed within a span of 16 weeks, is illustrated in Table 2.



Figure 2. Illustration of Action Research flow (2 stages are related into	2 cycles in the
process)	

<b>Table 2.</b> Planning of Workflow in the RPDS
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Week Flow	Activity/ Deliverables	Teaching and Learning Strategies	Remarks
Stage 01 (Cycle 01): Analysis Phase			
1-2	Divide into 4 subgroups to conduct a situation analysis	Students form into sectoral groups with 3-4 member clusters to collect data. Staff members with specialised fields supported the students in completing situation analysis. Students used online resources and contacted stakeholders instead of visiting institutes	Datasets provided by the staff for analysis. Access to university web pages are made free from data charges
3-4	Development of maps/ graphs/ figures to illustrate the status-co of region	Students brainstorm via an online platform (Zoom) to finalise the analysis. Use of online calls (WhatsApp) to mentor individual students by staff.	Due to lack of computers with the required capacity, map preparation tasks were given less priority in the evaluation

		Use nighttime data (12:00 am to 08:00 am) for independent working to manage data	
5-6	Development of Situation Analysis reports and presentations	Shared work among students based on resource availability (map- making & report writing)	Assessment of students based on overall progress. Student feedback obtained for better delivery of the module
Stage 02 (Cycle 02): Plan Preparation Phase			
7	Regrouped into 03 for plan- making process	Reformed by the groups based on student capacities, technical support, and stage 01 results. 15 students and 03 staff per one group.	Feedback based alterations were explained along with assessment criteria.
8-10	Visioning, Goals and Objectives formulation stage	1-2 member subgroups to conduct brainstorming and appointed leaders to communicate each step. National and International level planning experts used for discussions. Subgroups were assigned for staff to close monitoring of tasks	Additional time was given for those who face technical difficulties. Students shared sketches/ drawings in WhatsApp groups
11-14	Strategy Formulation	Small groups to brainstorm the strategies and present the outcome to each other (within group) Workshops to understand the strategies and staff mentoring. Individual submissions to assess the understanding of each student	Internal staff members and external resource persons were used for workshops. Evaluated innovativeness and creativity
15-16	Completion of Presentation and Report	Students were asked to provide the deadline for submissions while monitoring the progress of each group	Internal staff and external resource panel used for evaluation

## **Results and Discussion**

Once Cycle 01 was completed, the students were assessed both individually and group wise to assess the progress. The feedback was obtained from both students and staff members on the teaching, learning and assessment components of the tasks performed.

Under the teaching and assessment tasks, staff members have provided feedback on student performance and active participation in the sessions. The staff highlighted the technical limitations with regard to computers, the internet and the like, promoting student-student interaction in groups, building trust between students and staff, and flexibility in the learning process. Some of the key observations are listed as follows.

**Staff member 01:** "It's better to introduce methods to c the constraints of the resource. Some students were negatively impacted due to unavailability of resources, leading to is olation within the gro

**Staff member 02:** "A few students seemed to disobey the tasks as virtual environment caused limited interactions and trust. It is needed to be improved by focusing more student-centered outputs in a flexible arra

Alternatively, a survey was carried out to assess the student feedback on stage 1 tasks through an online questionnaire. Out of 46 students, 24 have responded with the problems they faced along with suggestions for the improvements. Figure 3 and 4 revealed the main problems faced by students in participating online mode of RPDS module.



What barriers did you face to participate in live Zoom sessions? 24 responses

Figure 3. Barriers faced by students in participating the online Zoom sessions.

According to the Figure 03, over 75% of the students in the responded sample had internet connectivity problems and other technical barriers in connection. Also, problems in scheduled tasks (time allocation) and limited freedom in home environment were highlighted by a few students.

According to Figure 4, students highlighted limited access to software programs, meeting deadlines and limited communication possibilities with colleagues as problems in completing assessment tasks during Stage 1 of the project.

As per the feedback outcomes, a review of teaching, learning and assessment tasks were carried out to modify Stage 2 of RPDS as Cycle 2 of action research. The activities were changed to suit the cognitive, social constructivism and motivational aspects of the collaborative learning process as identified from the literature. The modified actions under each approach are details in Table 3.

What difficulties that you have faced to complete the given assignments (group or individual tasks)?

24 responses



Figure 4. Completing the assignments in the module was a challenge for students.

Collaborative Features	Modified tasks in Cycle 2	Assessment
	Pair wise tasks for students with the opportunity	Individual
Cognitive	to present everyone's ideas	assessment
Approach	Provided exposure to international expert opinion and video-based teaching	Debates on critical evaluation of points
	Staff members monitor from time to time while	Leadership and
	students lead all subgroups	teamwork
Social	Allowed students to form into social media	Freedom of
Approach	nlatforms to discuss matters	thoughts and
rippiouen		interaction
	Allowed students to debate on matters via online	Peer-based
	forums, quizzes, and live chat sessions	assessments
	Determination of deadlines and outputs to suit	Group assessment
	RPDS learning outcomes by the students (under	and quality of
Motivational	supervision of staff)	output
Approach	Allowed students to have social meetups and cheer up sessions to break out from academic pressure	Student participation

**Table 3.** Activities used to improve the collaborative learning of students in Cycle 2.

At the completion of Cycle 02, students were assessed based on their cognitive, social, and motivational contributions in completing the assigned tasks. Stage 2, the plan preparation part involved students developing a vision for the region and developing strategic interventions to achieve the vision by utilising the potentials of the region. Consequently, students were categorised into sub-groups, brainstorming events were conduct, planning

techniques were used to prioritise strategies and stakeholders were consulted to verify the strategies and improve the future vision. At the end of Cycle 2, a staff-and-student based review was conducted to monitor the outcome of the tasks.

Based on the feedback from the staff members, a clear improvement of students was visible in Stage 02, compared to Stage 01. Nevertheless, about 3 students faced connection problems and related technical problems. However, overall, the staff members showed student interest in the module, overall teamwork, and communication skills improvement as the positive implications of the tasks. The negative implications in the overall project were the lack of interaction in virtual mode, limited efforts by students due to lack of peer pressure, extra effort for staff in monitoring each student, difficulty in setting a benchmark for the quality of work and poor timing of tasks. The staff feedback statements below explain the positive and negative feedback at the end of both cycles.

**Staff Member 03:** *" T h e* helped online delivery тe engage test different platforms like LMS, social media and online forums. The students have improved their communication and engaged in the tasks day and night; I had to stay up late for group discussions. At the end of the project, each student was attached to the group work and considered the plan as their own. Ιt wa s а pos

**Staff member 04:** "*Majority of the group members were co* identify as genuine work with the limited face-to-face interactions. Still, a few students played the passenger role while a few students took the leadership to bring an optimum outcome at the *end.*"

Staff member 05: " E v e n though R P D Swas conducted onl experience, stakeholder consultation and s e e body language. Difficult to create a full studio environme n t i n а virtual setti

In addition, 65% of the staff members agreed upon the importance of collaborative learning actions in virtual modules like RPDS, while 100% agreed that online delivery could not replace a field-based studio module. Given the situation, staff members had to provide extra time, effort, and commitment to complete the module via an online platform.

The students who participated in Cycle 2 have responded positively in completing tasks, as many of them were encouraged to work with peers in small groups instead of large groups supervised by the staff members. Similarly, the exposure to national and international expert opinion was an important factor in completing the module, where many students helped each other and praised the colleagues in their supportive role in the process. The negative aspects highlighted by the students were in line with the comments raised by staff, especially related to internet connection problems and limited field exposure. The comments highlighting the views of the students are stated as follows.

**Student 1:** "There were many problems encountered in connection problems are special. And we thank the lectures for giving us the knowledge to the maximum in a situation like this. This is also one unique ex

**Student 2:** "This regional project time period was a supportive instructors with us, and I got many experiences and more practical and theoretical

knowledge from those proceed discussions. Similarly, this time we discussed with local and international expertise. Therefore that is a wonderful opportunity for us as young planners, and t h a n k you very much for everyone's kind support

Finally, the academic performance was also assessed in each stage to view the students' improvements through action research intervention. The students were graded using various assessment evaluation techniques. 50% of the marks were given for individual contribution while 50% was for group contribution. The grades were categorised under 03 classifications named as Excellent, Good and Moderate categories. The grades of students in stage 1 and 2 were illustrated in Figure 5.



Figure 5. Grade comparison of students in stage/cycle 1 and stage/cycle 2.

According to Figure 5, the grades obtained in Cycle 2 has an increase of 56% compared to the similar grades in Cycle 1. The concentration of student grades towards the excellent category indicated the positive impact of the collaborative learning approach on academic performance as adopted in Cycle 2.

In addition, the external review examiners have appreciated the work completed by the students in the given situation, as the project was completed in the pandemic situation. The post review survey among staff members has suggested incorporating online teaching options in future operations of the RPDS module by integrating blended learning and collaborative learning approaches to achieve better outcomes of the module.

## Conclusion

This action research was conducted from April 2020 to July 2020, as the universities were required to conduct every module in an online platform with the outbreak of the COVID-19 pandemic. Level 3 students of the Department of Town & Country Planning had to complete a fieldwork-based design studio project named Regional Planning & Design Studio (RPDS), which was a challenge to conduct online due to the nature of the course. It was completed for

the first time in the history of the Department of Town & Country Planning undergraduate programs, prioritising the collaborative learning approach by highlighting the cognitive, social, and motivational aspects of teaching, learning, and assessment. The action research had two main objectives, namely (1) to understand the challenges of online delivery and (2) assess the effectiveness of collaborative learning.

As per the action research study results, the key challenges were identified from the teaching, learning, and assessment perspectives. Table 04 shows the challenges involved in the RPDS module delivery.

Teaching	Learning	Assessment
Poorteacher-studentinteractioncausedunderstandingonknowledgetransferstudents	Poor internet connectivity and lack of equipment to conduct proper planning exercises	The difficulty of assessing studio-based activities through an online platform
A significant difference in weekly tasks and actual completion due to virtual monitoring of progress	COVID-19 pandemic based physical and mental challenges to concentrate	Difficulties in judging the genuine contribution of the students via online modes
COVID-19 pandemic-based problems limit freedom and focus on module delivery	Limited responsibility for students due to limited peer pressure and interaction	Having to introduce a variety of assessment methods for students with limited connectivity and resources
Had to work beyond regular teaching hours to facilitate the student needs	Lack of field experience caused to make decisions on secondary data which could be different from real-world scenario	Impossible to generalise the results as each action was uniquely assessed

**Table 4.** Summary of challenges faced during RPDS delivery via online platforms.

As per Table 04 findings, the challenges were identified as unique matters to be considered in pre planning stage of the project. These challenges were highlighted by staff and students through the feedback surveys and thereby the objective 01 was achieved.

Collaborative learning was introduced to tackle the challenges, as identified in Table 04, and to meet the learning outcomes of the course. The analysis showed that the collaborative approach positively affected student learning, teaching, and assessment of RPDS. Therefore, a collaborative learning approach can be considered a viable choice for the online delivery of field-based studio projects. Nevertheless, it is essential to note that, collaborative approach was selected to minimize the negative effects of online delivery of RPDS, but not to eliminate all of them. Therefore, challenges and limitations would still exist in the whole process as identified in Table 04, which could be overcome by using additional teaching and learning methods such as using online resources (videos, quizzes, games, interaction boards, etc.) and exposure to international expertise in spatial planning.

Overall, it can be concluded that online delivery of field-based studio projects requires significant pre-planning and continuous monitoring to achieve its learning outcomes. The action research conducted for the RPDS module was one step towards blending online resources in university education. The results suggest that traditional face-to-face classroom projects will need to consider innovative and creative ways of conducting lessons in online platforms in situations such as pandemics and similar unforeseen scenarios. The adaptation to such modes is challenging for both staff and students, in which case new teaching and learning methods must be adopted. The results of this action research are unique to the specified module, but the methodology could be helpful for collaborative learning methods in various modules at the university level. Similarly, this research can be further improved by adopting blended learning approaches along with collaborative methods to observe the outcomes of the students, as the new learning ways could stimulate their creativity and enthusiasm in modules.

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## An Action Research on Improving Students' Mathematics Learning Using Collaborative Approaches

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#### Abstract

Collaborative learning is a student-centered approach, which is grouping the students, for the purpose of achieving academic goals. Collaboration is included in the  $21^{st}$  century frame work (P21) as a learning and innovation skill and still it is challengeable to teachers in their classroom practices. This ongoing action research aims to use collaborative approaches in classroom practices to improve student learning while improving collaborative skills among the students. Participants of the action research are Grade 8 students (N=20) from a type 1AB school in Kandy District, Central Province, Sri Lanka. The "Directed Numbers" lesson unit wa s se-lected student groups were created and a pre-test was given to measure the initial performance Based the of the groups. o n analysis students 0 f of group behaviors, four worksheets were prepared. Worksheets are based on the basic mathematical operations of directed numbers. These were given to the groups in four occasions and observations and reflections were recorded. Finally, a post-test was given to all three groups. Five students were interviewed during the process. The analysis of data revealed that all three groups showed improvements in marks. Groups showed gradual improvement in their communication, presentation skills and team work abilities. Observations also revealed that the majority of students actively participated in collaborative working than in usual classroom situations. Analysis of interview data revealed that students improved their perceptions regarding mathematics learning. They mentioned that collaborative group working is interesting. They are also of the view that through the peer discussions they can easily memorize the concepts. It is also observed that students shared their responsibilities and ideas to achieve better marks for the group. students Even though were interested i n the support for learning. The results suggest that collaborative learning was useful in o f e nhancing the students' understanding the individual accountability among the students in group work. Teachers can apply more student-centered approaches for improving mathematics learning within the classroom. Further, teachers may need to be familiarized themselves with collaborative learning strategy. Since we have to use online teaching and other means during lock downs and prolonged school closures, we intend to explore further how the computer assisted collaborative approaches could b e used t o e n the next cycles of the study.

**Keywords**: Collaborative approaches, collaborative skills, mathematics learning, perception

## Introduction

Throughout eight years of experience as a teacher, I experienced that the students' mathematics learning is not up to very satisfactory level. So, I was struggling to find the answers to this issue. In June, 2020, I was able to participate in four action research workshops conducted under the Development Oriented Research (DOR) grant at University of Peradeniya, Department of Education. Workshops were highlighted the concepts about the 21<sup>st</sup> Century Skills and use. Then, the collaborative research team (CRT) including myself, sensed that collaborative approaches might enhance the students' achievement in mathematics. CRT also explained how to do classroom-based action research. In addition to that, CRT resource persons, who conducted workshop sessions on incorporating 4Cs and metacognition in mathematics also stimulated my thinking towards applying such knowledge in my classroom. As a result of my active participation in all those workshops and considering the reflections of CRT, this action research was designed. Aim of this research is to use collaborative approaches in classroom practices to improve student learning while improving collaborative skills among the students.

Research questions are; (a) How can we use collaborative learning approaches to support students' learning in mathematics and skill development? (b) How can we help students to improve their perceptions of learning mathematics?

#### Literature review

Collaboration is a way of interaction and personal attitude where individuals are responsible for their actions, learning, their abilities and contributions of their peers as well (Chandra, 2015). The pedagogical practice of collaborative learning has increasingly attracted the attention of researchers. It is a well-discussed topic in the 21<sup>st</sup> century educational frame work as a learning skill. Out of the learning skills collaboration has become a 21<sup>st</sup> century trend (Laal, 2012). My own thinking about collaborative learning approach is students working together on activities or learning tasks in small groups. They all participate in a collective task that is assigned by the teacher. All students discovers together the final result of the given task.

Outcomes of the experimental study by Idi Warsah (2021), conclude that collaborative learning applied in the form of group discussions has a positive and significant impact on learners' critical thinking skills and also promotes the retention of their critical thinking skills. In addition, the investigation depicts that collaborative learning is contributive to learners' emotional awareness, learning motivation, cognitive development, and broad-mindedness. Also, Duraman (2015) point out that collaborative learning improves thinking ability, communication skills and performance other than individual learning.

The experimental research findings of Han (2013) indicated that the Mindtool-integrated collaborative educational game not only benefits the students in promoting their learning attitudes and learning motivation, but also improves their learning achievement and self-efficacy owing to the provision of the knowledge organizing and sharing facility embedded in the collaborative gaming environment.

Based on this literature, this action research study is designed to promote the concept of collaborative learning for the teaching-learning process. Further, the concept is used for

enhancing students' mathematics learning achievements; development of skills in terms of communication, presentation and team work abilities in class rooms.

## Methodology

The action research process was planned and implemented according to the steps in below figure 1.



Figure 1. Process of actions taken during the first cycle of action research

A questionnaire was given to get the ideas about students' attitudes towards mathematics learning. The responses showed that a considerable percentage of students did not fully agree with some items: 85.8% agreed with the statement "I am fluent in solving hard problems in mathematics", 71.4% with the statement "My teacher says that I am fluent in mathematics". Also, 54.2% commented that they fully agreed with the statement "Mathematics is the hardest subject than other subjects". It implies that the students have negative feelings regarding mathematics. Next day, a classroom discussion was carried out with the students about their difficult areas in mathematics and students said that they have difficulties in the lesson Directed Numbers. This issue was discussed with the research team and the team's advice was to implement collaborative activity-based method for the teaching process. 20 Grade 8 students were selected for the action research.

At the beginning students were divided in to three groups as G1(N=7), G2(N=6) and G3(N=7). A pretest was given to each group to measure the students' existing performance and group

behavior. The allocated time was 30 minutes and included 15 short answer questions related to the topic "Direct Numbers". After considering the reflections it immerged that they hardly remember the rules of the directed numbers and use. Then activities were planned for work sheets, where students can more collaboratively participate to complete tasks. Worksheets are based on the basic mathematical operations of directed numbers and they were given to the groups in four occasions.

First work sheet (WS1) was given to each group and the students were allowed to collaboratively work on it. Then the students were asked to present their findings. Improvements of the group findings were highlighted through a classroom discussion. Other three work sheets (WS2, WS3, WS4) were given to the groups using the same process. Finally, a post-test (same structure as pretest) was given to each group to measure the success of the mathematics achievements.

Throughout the group presentations, group communication, presentation skills and teamwork skills were observed. Observations were marked according to a checklist to measure the success in collaborative skill development. Reflections were entered into a journal. Students' perception was investigated through the semi-structured interview schedules (it included 5 questions). Five students were interviewed during the process. Then the quotes that best illustrate the research questions for analyzing the interview data identified.

#### **Results and Discussion**

**Research Question 1:** How can we use collaborative learning approaches to support students' learning in mathematics and skill development?

*Learning in mathematics:* Considering the marks obtained for the pretest and posttest it was noticed that group 1 increased their marks by (+4), group 2 by (+8) and group 3 by (+15). There exists a positive improvement to the results of the test scores. Thus, results revealed that the collaborative approaches support the students' learning positively. Also, all groups showed gradual improvement of marks for the work sheets.

*Collaborative Skill Development:* This approach does not only improve students' learning performance, but it also provides opportunity to individual students to develop their collaborative skills. By using an observation checklist these skills were measured. During the very first collaborative activity, student's engagement was not up to a satisfactory level. But gradually they developed their skills such as communication, presentation and team work skills.

When considering the final collaborative work, the students of group 1 actively participated in the activity, they set a goal, most of the group members shared their ideas to get the final outcome, listened to each other, obeyed the leadership and nominated a good presenter who clearly presented the findings in front of the class (figure 3). When the presenter had problems they helped him, and ultimately, they did a good team work. Compared to group 1, group 2 also did a good collaborative group work. However there were mistakes in their findings. Group 3 did not achieve a very satisfactory level compared to other two groups because all the members did not interact with the leader. The leader of group 3 was taking more responsibility in doing the work. The tables and chairs were arranged in a group setting (figure 2) so the students can have a better face-to-face discussion with their peers.

**Research Question 2:** How can we help the students to improve their perceptions of learning mathematics?

The second research question investigated the students' improvement in perception towards mathematics learning using semi structured interview data. Students believe that they can easily understand the topic through the peer discussions (figure 2). Through interactions, students could recall the forgotten subject matters as suggested in the following extracts from the interviews:

"Actually, I forget the topic at first. But by I remembered it" (Student 1) "I forget totally how to solve problems by usi

my friends when discussing" (Student 3)

The collaborative approach also promotes individual accountability among the students because they felt the need to make their peers understand the topic. Each and every member of the group has responsibility in doing the given task successfully. Students feel that if all members are not fully involved in the task, they may fail to acquire high marks. Following extracts from the interviews prove this:

"If all contribute well our group can get good according to overall performance" (Student 2) "Some of my friends are weak in mathematics. I areas" t3) Studen

Collaborative approach also promotes students' interest to the subject. Students face difficulties when solving mathematics problems individually. But when they work as a group, they can avoid such difficulties and make mathematics fun. It improves students' motivation and positive attitudes towards the subject through the interactions as suggested in the following extracts from the interviews:

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"Yes teacher, some days I felt mathematics is
problems individually. But this is very good. Working with friends
makes me comfortable in mathematics" (Student
"We have to do activities to score more marks.
is so interesting" (Student 5)
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Collaborative approach is better way for improving students' perception towards the subject. It is a good practice for the skill development of the students (figure 3). Even though students are interested in the approach they still preferred teacher's support for mathematics. So, in the Sri Lankan classroom the teacher handles a major role. Teachers can apply more student-centered approaches for improving mathematics learning. Following extracts from interview transcripts facilitate this comment:

"This is good. We can so the teachepteachebslems within gr the lesson" (Student 2)

"I like to do these activities with my friends can ask for the teacher's help" (Student 5)



**Figure 2.** Students are discussing within group

**Figure 3.** Students are presenting their group work findings

## **Conclusions and Suggestions**

The findings of the study showed that collaborative approach supports students' mathematics learning achievements, students' perception on mathematics as well as development of skills respectively. The use of collaborative learning in the classroom had ensured that the students work together by becoming more involved in promoting each other's learning and in participating equally. Further, collaborative learning was useful in enhancing the students' understanding of the subject, as they showed a positive improvement in the post-test. Students took the responsibility in teaching their peers to understand the learning material better, understood the content of the topic using their own examples to facilitate their learning. Students gave equal value for each other's opinion and gained higher confidence in their work.

Collaborative learning is recommended for teachers to use as part of their teaching strategy because it provides ample evidence of support in students' learning. Teachers should structure the collaborative activity properly by meeting the actual learning outcomes. So that it will enhance students' learning with better understanding and the learning process will be more organized. In addition, teachers need to emphasize to students the importance of equal participation, interdependence and accountability, and to have unity with each team member.

The suggestions can be made on the use of collaborative learning in future research as, the tasks provided to students need to be more challenging in order for them to think critically as mentioned earlier considering acquirement of the 21st Century skills. Future researchers can explore how students manage their group when conflicts emerge. Consequently, teachers may need to familiarize themselves with collaborative learning strategy in order to be more structured in developing open communication between teachers and students.

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