LEARNER ENGAGEMENT AND EXPERIENCE IN FOCUS: Challenges, Opportunities, and Way Forward

Edited By
MMDR Deegahawature, PhD

Staff Development Center
Wayamba University of Sri Lanka

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Makandura, Gonawila (60170)
Sri Lanka

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ISBN: 978-624-5564-05-7
978-624-5564-08-8 (E-copy)

Title : Learner Engagement and Experience in Focus: Challenges, Opportunities, and Way Forwards
Edited by : MMDR Deegahawature, PhD
Published by : Staff Development Center, Wayamba University of Sri Lanka, Makandura, Gonawila 60170, Sri Lanka

Cover Design by AL Dilum Kanisha & Dr. AD Dharmawansa
Typeset by TU Naotunna
Printed and bound by Warna Printers, Kuliyapitiya, Sri Lanka

Forward

It is an honor for me to provide this foreword to the latest publication of the Staff Development Center (SDC) of the Wayamba University of Sri Lanka (WUSL), edited by Prof. MMDR Deegahawature under the theme, "Learner Engagement and Experience in Focus: Challenges, Opportunities, and Way Forward". From its inception, the SDC has consistently made noteworthy contributions to uplift the higher education sector in numerous ways. Facilitating the publications covering various aspects of the teaching-learning process is one such significant contribution. I am confident that this book would be a momentous event in its journey towards strengthening the academia.

The scholars are constantly investigating how to improve the effectiveness of higher education, focusing on indices such as student employability, retention, performance etc. One of the focal areas of those investigations is learner engagement and experience as it is recognized as a determinant of an effective higher education system. Continuous changes and the complexity of the environment demand special attention on enhancing the learner engagement and experience. Addressing the need, this edited book focuses on the challenges, opportunities and approaches to enhance student engagement and experience. The book includes sixteen interesting chapters under three sections. The present environment creates challenges and opportunities for promoting learner engagement and experience. The first section is devoted to delineating those challenges and opportunities together with possible steps to face them. The second section is about student-centered learning. It looks for the opportunities and strategies to promote learner engagement and experience in the student-centered learning method. Section three discusses how to promote learner engagement and experience through alternative approaches and tools. Particularly, the section deliberates on how blended learning, e-learning, learning analytics etc. can be adopted to promote learner engagement and experience. I find that the contents of this edited book provide a useful guide to educators, higher educational institutions and policymakers.

The SDC is well-known for its unique service to uplift the standards and competencies of all categories of staff at WUSL and other higher educational institutions, thereby contributing to the advancement of the higher education sector in the country. I take this opportunity to thank and congratulate the SDC for its worthy service. Also, I congratulate the editor and the authors of the chapters for their valuable contributions. Finally, the editor and the authors deserve my best wishes for their future endeavors to serve the academia.

Senior Prof. Udith K Jayasinghe
The Vice-Chancellor
Wayamba University of Sri Lanka

Preface

The ever-changing environment has made the education environment complex and challenging, demanding changes in philosophy and practice. The necessity of changes and improvements in the teaching and learning process is highly recognized with the aim of enhancing the teaching effectiveness. Educators around the world bring innovative novel approaches along with new applications of old approaches to face the challenges. Yet, the vacuum has not been filled, and improvements are required in different aspects of the teaching-learning process. Especially, there is a growing need for the approaches and tools to facilitate learner engagement and experience in the teaching-learning process.

This book intends to contribute to fill in the gap by presenting the discussions on challenges, opportunities, traditional approaches, innovative applications of popular approaches, and novel approaches to enhance learner engagement and experience in higher education under three sections. Policymakers and higher education institutions will find the contents of the book useful to promote learner engagement and experience. This book will provide useful inputs and a guide to educators to increase the effectiveness of the teaching-learning process.

The changing world makes challenges but, creates opportunities. The first section is devoted to discuss such challenges caused and opportunities created by the changes in education. The section refers to stimulating the learner engagement and experience. Chapter one is about the generation gap. While highlighting the generational disparities between generation Z learners and educators out of Generation Z, and importantly, the traits of Generation Z learners, the chapter discusses how the educators can enhance the learner engagement and experience of the new generation learners. Chapter two identifies challenges faced by higher education institutions. Also, the chapter identifies the drivers of learner engagement and experience and recommends several steps to promote the same while overcoming the challenges. The Covid-19 pandemic was a unique situation the world come across. Referring to the pandemic, chapter three inquires the challenges and opportunities in stimulating engagement in online delivery. After identifying the challenges through the views of university administrators and academics, the chapter presents immediate, short-term, and long-term measures to address those challenges. Extending the discussion on present changes and challenges in higher education, and adding key facets of improving learner engagement, chapter four suggests different roles of academics to stimulate learner engagement. Chapter five insists on the need for active participation of both teachers and students in the teaching-learning process. While introducing the present environment of

higher education in the country this chapter highlights different factors and strategies determining students' participation and effectiveness of teaching.

Owing to the shift in general principles, pedagogy, and management strategies used for classroom instruction, the teaching method shift from the teacher-centered approach to the student-centered approach. While having own pros and cons in both approaches, the student-centered approach is promoted in higher education. Thus, section two explores how learner engagement and experience be improved in the student-centered approach. Discussing the evolution and the rationale behind the student-centered learning method, chapter six deliberates the change to be implemented to enhance learner engagement. Chapter seven assesses the role of a teacher in student-centered learning while identifying the features of a student-centered classroom and alternative approaches to promote student-centered learning. Extending the discussion, chapter eight presents several strategies, and alternative approaches to improve learner engagement in teacher-centered and student-centered methods.

The world responds to environmental changes through new applications of traditional methods and adopting the techniques developed in other disciplines. Educators also attempt to practice this strategy. The section there, therefore, is devoted to several such approaches used to promote learner engagement and experience. Chapters nine and ten are about blended learning. Chapter nine highlights how the blend of traditional and modern, technology-based teaching approaches be effective in enhancing learner engagement and experience. The chapter justifies the use and applicability of blended learning. Also, it presents the challenges, strategies to address the challenges, and keys for success in the classroom and beyond. Extending the discussion in the same thread chapter ten discusses the challenges, benefits, and success factors of blended learning while highlighting useful methods and models. Chapter eleven identifies e-learning as an effective tool for improving the quality of higher education. While presenting several e-learning theories along with the principles of designing an e-learning process, the chapter presents different types, approaches, challenges, benefits, and discusses how to use e-learning to improve the effectiveness of the teaching-learning process. While providing an overview of e-learning, chapter twelve discusses how e-learning can effectively be adopted as a tool to provide higher learner engagement and experience. Identifying academic success as an important benefit of learner engagement, chapter thirteen describes several approaches to stimulate and promote learner engagement thereby employability. Chapter fourteen extends the discussion by adding several key innovative teaching and learning methods that stimulate learner engagement. Chapter fifteen is about distance education that gradually becoming salient owing to the changes in the environment. Presenting related theories and models, the chapter

proposes that only a few of them can enhance learner engagement and experience. Chapter sixteen is about the use of analytics for promoting learner engagement and experience. Learning analytics provides numerous benefits including predicting academic success. The chapter presents the mechanisms and technical infrastructure required to implement learning analytics in an institution.

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07th April 2021

Acknowledgment

It is my duty to extend my appreciation to all those who help bring this book out. First, I reserve a special thanks to Senior Prof. Udith K. Jayasinghe, the Vice-Chancellor, Wayamba University of Sri Lanka (WUSL) for all his encouragements and continuance guidance. Also, I am greatly indebted to Prof. Jayasinghe for his insightful forward. As a senior consultant and expert in staff development in academia, his words add immense value to the book. He deserves special thanks for his distinct service to setup higher-standards in staff development in WUSL. Adding all resource persons of the Staff Development Center (SDC) including Prof. Ajith Jayaweera to the list I extend my thanks to them for their contribution.

There are many pillars behind the success of this book. I note the support that I received from the members of the SDC including Ms. Maheshi Anupama. Also, I am grateful to Mr. AL Dilum Kanisha and Dr. AD Dharmawansa for the cover page design, and Ms. TU Naotunna for typesetting. Also, I extend my appreciation to the owner-manager and staff of the Warna Printers, Kuliyapitiya. Finally, I extend my gratitude to all authors for their untiring effort to finalize impactful the chapters.

MMDR Deegahawature, PhD
Wayamba University of Sri Lanka
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07th April 2021

Content

SECTION 03

Section 01

Challenges and Opportunities

CHAPTER 1

Educating Generation Z: Engaging Tomorrow's Learners While Enhancing the Higher Education Experience

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The twenty-first century is the era we experience the modern structural change for a knowledge economy. Given the recognition and significance of a knowledge-intensive economy, higher education has garnered worldwide attention. Hence, all higher education institutes strive to provide students with a holistic approach that would help students to contribute to sustainable economic and social development through enhancing their interpersonal, intellectual, and innovative skills. While approaching this competitive edge, the ultimate objective of each higher education facilitator is to enhance the engagement and learning experience of their students.

As a result, there has been a myriad of research studies exploring different perspectives of learner engagement and experience. "Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution" (p. 3)[1]. Consequently, student engagement has become a key benchmark metric of learner experience. Satisfactory engagement attracts students to maintain a positive life-long relationship, which starts from the day they become the applicant and continues to alumni, with the university. Therefore, higher education institutions aim to ensure that students receive a unique and exceptional experience which extends beyond studies.

Conversely, as a result of the demand for a knowledge-intensive economy, warranting an outstanding learner experience was quite challenging. In the present context, there is a greater interest than ever before in higher education. This attracts a large number of students to academic programmes creating 'massification', which could possibly jeopardize the engagement of learners. Due to staffing and funding issues, higher education institutes are at a stake of managing large groups of students, while in-class

passivity among students exacerbates the risk. Moreover, the progress of safeguarding a sustainable learning experience is hampered by the interchangeable terms of student engagement, such as involvement, engagement, and participation, and the scantiness of studies that provide more precise clarification for the definition of student engagement[2].

Given that, to the best of found knowledge, student engagement has been recently defined as "A student's positive social, cognitive, emotional, and behavioural investments made when interacting with their tertiary institution and its focal agents (such as peers, employees and the institution itself)" (p. 3)[3]. Authors posit the framework on two antecedents (expectations and involvement), which act as continual reference points throughout the student experience. Further, they suggest that effective integration of four pillars of student engagement, which are behavioural, affective, social, and cognitive dimensions, would yield student and institutional success that can be measured through transformative learning, student wellbeing, self-esteem, self-efficacy, and institutional reputation (Figure 1).

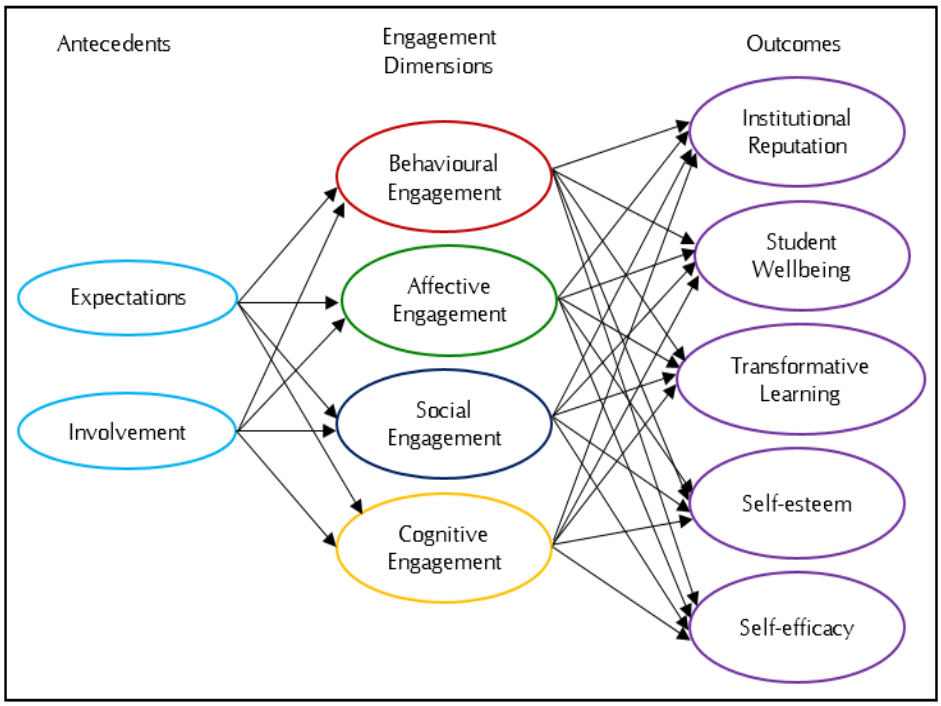

Figure 1 – Conceptual Model of the Four Pillars of Student Engagement[3]

Enhancing Learner Engagement in Higher Education

The behavioural dimension impacts students' observable academic performance, which can be measured through their participatory actions and activities. Students, who are behaviourally engaged, are proactive in their personality, and often conform to the behavioural norms of the institution.

Hence, students would exhibit well-mannered and disciplined behaviour[1]. Behaviourally engaged students actively involve and participate in both academic and extracurricular activities, and therefore, performance can be measured through a variety of dimensions, such as students' positive conduct, attendance, effort to stay on task, contribution, participation in class discussions, involvement in academic and co-curricular activities, time spent on work, and perseverance and resiliency when faced with challenging tasks. Moreover, research studies have found that behavioural engagement of students would yield self-efficacy and self-esteem[3].

The learning pyramid depicted in Figure 2 illustrates the average retention times of different study methods and materials, where listening to a lecture reflects the lowest while allowing students to teach others records the highest retention rate. Nevertheless, lectures cannot be disregarded just because the learning pyramid highlights its ineffectiveness compared to other methods. Lectures are still of pivotal importance to open avenues to novel ideas, enhance inquisitiveness, and guide students to correct pathways. Consequently, lecturers should have the capacity to facilitate a learning ambience, which would arouse interests, involvement, and motivation of students.

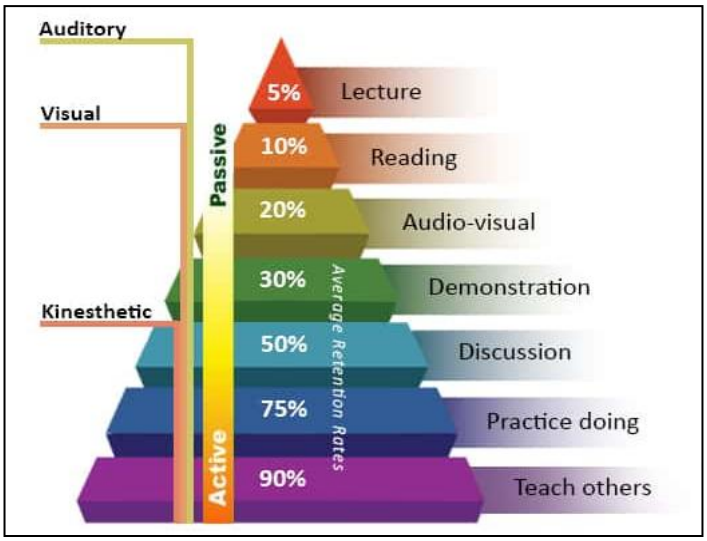

Figure 2 – Learning Pyramid
(Source – National Training Laboratories, Bethel, Maine)

At the beginning of the semester, students should be well aware of the course outline, assessment criteria, textbooks to refer, and rules and obligations. However, paying attention to extended lecture hours is a tedious activity for anyone. To make students actively engaged with the session, it is mandatory to give small breaks for students to refresh themselves. Further, going beyond the traditional setting of lectures by introducing some

variations, such as brainstorming, flipped classrooms, peer evaluations, moving seats into a circle for small group discussions, etc., would possibly reduce the monotonous feeling that may occur as a result of continuing the same task and posture for extended periods of time.

While expecting active engagement from students, the main responsibility lies in the hands of the lecturers to preserve the dynamic atmosphere. All students should be given a chance to raise their voice despite their persona, gender, religion, race and ethnicity, etc. Thus, it is the lecturer's duty to limit the contribution of dominating students. Conversely, there may be some students who are not interested in oral participation, not because they are shy or reserved but wish to remain silent during discussions. Given that, lecturers need to find alternatives to acknowledge the active participation of those students as well.

Additionally, students may find some of the concepts difficult to understand while the lecturer thinks they are easy. Therefore, it is necessary to ask for immediate feedback after an explanation of a specific topic or a newly introduced variation. It facilitates the lecturer to improve the current setting by identifying pros and cons. Studies recommend to ask "What questions do you have?" instead of "Do you have any questions?" as the former revealed to yield better responses, and to rephrase the question if no student respond within eight seconds. Besides, lecturers are not accountable for knowing everything. If a student raises a question that the lecturer does not know the answer, this knowledge gap can also be used to augment student engagement. Students can be encouraged to speculate answers until you let them know the answer following a thorough search.

Moreover, students' active involvement and participation in assigned tasks, should be rewarded to shape up their behaviour through stimulating the learning experience and motivating students to do better. In recognition of hard work and outstanding performance of students, trophies, plaques, or certificates can be presented. Financial assistance can be provided to purchase textbooks, stationery, or any other relevant material that students need to fulfil their academic matters. Apart from money spending rewards, there are a number of other compliments as well. Sometimes, all they want are a few words of appreciation. Open-book test for the final examination, cancellation of a test, an extension of a deadline, extra points on the final examination, going on a field trip of students' choice, nominating them for the 'student of the month' and faculty/ university awards, featuring them on the department newsletter would be more effective in persuading students in positive engagement. Students can be motivated focusing on their career aspirations as well. Lecturers can help excellent performers with their job or graduate school application by providing recommendation letters, review the resume and cover letters, and introducing them to potential employers. Recognition of students' outstanding performance not only motivates

students but also promotes the idea that learning is ultimately its own reward.

The affective dimension of student engagement refers to the positive emotions experienced by students during on-campus and off-campus activities. It is found that emotions share a close relationship with students' learning, achievement, life satisfaction, and health; therefore, positive feelings, such as happiness, delight, joy, elation, optimism, pride, openness, enthusiasm, and curiosity, invest in a sustained psychological tertiary experience that extends beyond the university. Emotionally engaged students have been identified as the students who have a precise understanding of their academic tasks and social interactions, and hence, affective engagement pertains to the behavioural engagement as well. Furthermore, both learner and the institution would affect as a result of the affective engagement by yielding transformative learning, student wellbeing, and institutional reputation as outcomes (Figure 1)[3].

Nonetheless, the achievement of these outcomes depends on the availability of an inclusive space and the mental health of learners. Maintenance of an inclusive environment is of paramount importance for students to feel comfortable in sharing their thoughts. Malleable and compassionate approach should be extended to students ensuring that there is no room for sarcasm, criticism, or embarrassment in the lecture hall. Each and every student should feel that they are valued and preserved in the learning environment. Moving around the lecture hall when students are involved in group activities, would also be effective in engaging students. Students, who remain silent during lectures, often tend to be open to raise questions and clear doubts when the lecturer is next to themselves. This would possibly yield a sense of fulfilment for passive students as well.

Moreover, mistakes and wrong answers should be tactfully corrected while appreciating students' attempts despite the accuracy of the answer. Students are afraid to take risks and embrace challenges if they feel insecure during the lecture. Given that, mistakes should be valued as opportunities to identify students' potentials while rewarding perfection. However, not only extrinsic motivation but also intrinsic motivation should be cultivated in the learning environment to be productive in affective engagement. Maintenance of a pleasant personality as a lecturer, sharing bits of personal experiences to make the lecture fun and interesting, and allowing students to work autonomously, would unintentionally motivate students to attend class and pay attention.

Ensuring mental health is also vital to strengthen students in emotional intelligence, whereas, stress caused by deadlines, assignments, and heavy workload hinders the progression. Open-book tests, proposing multiple options (oral presentation/ poster presentation/ report) to complete an assignment, offering a range of topics to choose, allowing students to

create groups according to their preferences, letting students work on different subsections instead of allocating individual assignments on the main topic, etc. would assist learners to be successful academically and mentally. While behavioural and affective aspects are significant perspectives of the student engagement, past studies had found that social and cognitive engagements are necessary, but not sufficient conditions for student success[3].

The social component is pertinent to both inside and outside the classroom engagement, where feelings, such as inclusivity, belonging, purpose, socialisation, and connection to the tertiary provider, are generated through reinforcing the bonds formed between students and relevant stakeholders in the tertiary experience. Student engagement inside the classroom is led by cooperation, listening to others, attending class on time, and the maintenance of a balanced teacher-student power structure, while students' participation in community groups, study groups, and student societies facilitate engagement outside the classroom. Social engagement affects not only student engagement but also their experience. Students who are socially engaged are found to experience a sense of achievement from their university experience while learners who are not socially engaged are vulnerable to loneliness and isolation[3].

Students can be socially retained through allocating group activities, such as creating study groups to help peers, involving students in volunteer projects, assigning focus group discussions to complete assignments, encouraging learners to take part in student societies, sports, and other extra-curricular activities, etc. While these actions enhance the peer-to-peer relationship, bonds between students and the staff can be improved through student mentoring, counselling, and conducting various weekly activities. Weekly activities can be a trip to somewhere away from the university, where both staff and students undertake different kinds of team building activities. Further, exhibitions, game zones, informal knowledge arcades would also be effective in fostering the social integration between staff and students. Additionally, encouraging students to take part in voluntary services and being mentored by professionals in the industry would possibly drive student engagement, which extends beyond the university, while benefitting not only students but also the society.

Cognitive engagement impacts the willingness of students to pay attention to tertiary communications and allocate time on planning and organising academic accomplishments. Cognitively engaged students are characterized by higher-order thinking and positive academic expectations, which are driven by good grades, hours of study, motivation, perseverance, and intellectual challenge. Moreover, these students are more likely to have a precise understanding of the importance of academic tasks[3]. Therefore, learners should be exposed to an active learning environment where intellectual and reasoning motives are encouraged.

However, only a handful of students would be inherently gifted with such cognitive skills while the rest of the group should eventually develop the skill. This can be achieved by allowing students to experiment with the world around them, where learners are assigned to the role of the decision-maker. Letting students engage in small experiments, modelling and simulations, debates, mind mapping, brainstorming, capstone projects, etc. would assist them to perform a powerful action through visualizing and reasoning the underlying causes for an existing problem.

Nevertheless, anticipating all learners to demonstrate higher-order thinking skills would be futile in retaining students. Consequently, it is the sole responsibility of the lecturer to identify students' strengths and weaknesses. Properly handled student engagement should be a blend of behavioural, affective, social, and cognitive dimensions, and is necessary for facilitating students a valuable learning experience. Hence, significant attention should be devoted to identifying all these four aspects of student engagement to ascertain sustainable learning experience.

Enhancing Learner Experience in Higher Education

Even though higher education institutions strive to enhance the learning experience, priority is often given to graduation rates and the levels of educational attainment. As learner experience goes beyond the university chapter, focusing on both pre- and post-graduation phases are essential. Thus, while ensuring students graduate, higher educators should prioritize the need to maintain a vigorous alumni community and potential advocates. Given the two-way causality between student engagement and experience, analogous coordination of these components is imperative to make the learner experience valuable and sustainable.

Despite having good grades, it is significantly notable that the performance of the majority of students is not up to the standards. Employers often complain about lacking basic skills, such as writing, problem-solving, critical thinking, communication skills, etc., of graduates they hire. Besides, these are the fundamentals that educators consider as most important and expect to observe in the graduate profile. Another critical aspect of learner experience is the rising concerns of the institutions regarding the satisfaction of students. The knowledge-intensive economy has been creating growing competitiveness among universities, faculties, departments, and sometimes even among lecturers, obscuring the higher education system through grade inflation and curtailing the consistency of academic standards.

Given that, the quality of degree programmes should be precisely regulated by an experienced group of educators through conducting frequent curriculum revisions and programme reviews. As some evaluation rubrics may lead students to be overly self-assured, a meticulous approach should be available for students to evaluate themselves considering the

learning outcomes defined in course specifications. Not only students but lecturers also tend to be over-confident of themselves regarding their performances in teaching, whereas there is a huge difference between how lecturers think they can perform and their actual competence. Bridging this gap is necessary to preserve quality learning. Hence, lecturers should also be assessed by students' feedback and peer evaluations. Further, self-evaluations should be encouraged among lecturers by providing necessary facilities to video record their lecture sessions.

However, making every effort to enhance academic development does not yield sustainable learning. Learners should be assisted with the opportunities to enhance their personality and future career professionally, psychologically, and spiritually. Professional development workshops and career fairs are the platforms which students should be exposed to while keeping learning as the primary objective of higher education. Emotional support should be provided with counselling and mentoring services. Alumni is also a significant stakeholder in ensuring the learning experience, where students can be motivated by creating opportunities to engage with alumni. Furthermore, learners should be encouraged to participate in extra-curricular activities, which embrace diversity representing students from different cultures, religions, and ethnicities, while maintaining the balance between academic and non-academic activities.

Learner Engagement and Experience in Generation Z

Regardless of the tremendous efforts taken by the higher education institutions, professionals need to reckon the new generation, which is Generation Z, when trying to enhance learner engagement and experience. Generation Z learners are born roughly between 1997 and 2012, and the first demographic cohort which does not know life without the internet and technology. Generation Z is marked with a significant and productive relationship with the digital world, whereas, the educators, who represent the generations of Baby boomers, Generation X, and Millennials (Figure 3), have been accustomed to different learning and teaching environments. This creates the biggest challenge for universities to cater needs in a novel approach to a segment that they have never been used to while recognizing the generational disparities in attitude, behaviour, and communication.

According to the view of Generation Z students, a lecture should entertain them where PC-recordings are preferred instead of taking notes. Further, they tend to raise questions online while demanding instant responses as they do not like waiting[4]. However, these thoughts should not be blamed because they are the first generation born into a globally connected world, where technology has been tailored for them at every stage of their lives. Therefore, it is of utmost importance for educators to embrace technology to retain Generation Z students in higher education and ensure them a valuable learning experience.

Despite the traditional thoughts having on tech devices regarding their distractions, students should be allowed to use their mobile phones and tabs in class, if they need them for academic purposes. As Generation Z learners are not fond of writing, various educational applications should be introduced to students to facilitate digital learning. Applications, such as 'Notability' and 'Squid', allow students to create notes while incorporating handwriting, drawings, audio, and pictures into one comprehensive note. Besides, students, who find it difficult to pay attention to the lecture while taking notes, can benefit from audio recording features of these applications.

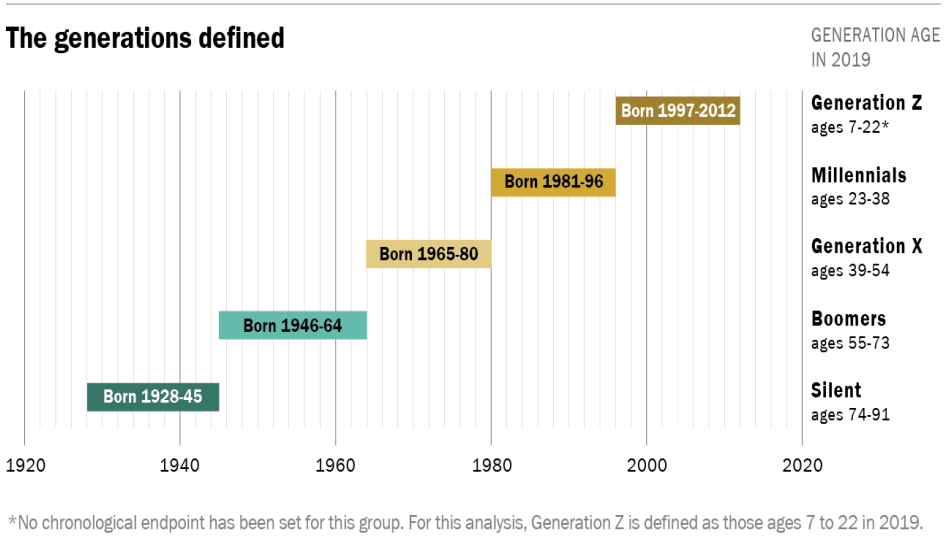

Figure 3 – Generations and Ages
Source – https://www.pewresearch.org/topics/generations-and-age/

Moreover, learners can get the help of applications to complete assignments. Especially, when students are assigned for group projects, speech-to-text applications, such as 'Dragon Microphone', 'Voice Notes', etc., would be beneficial to put everyone's thoughts down quickly and refine the draft over time. 'Sound Note' is another audio recording application, which integrates typing and sketching, that can be used during group discussions and while conducting interviews for assignments and research. Additionally, students can use applications, such as 'Canva' and 'Pixlr Express', to polish assignments, reports, and projects by adding graphics.

Furthermore, vocabulary-building apps, such as 'Dictionary.com', 'PowerVocab', 'Magoosh Vocabulary Builder', etc., and proofreading tools, such as 'Grammarly' and 'Gradeproof' should be introduced to learners to improve vocabulary and writing skills. Apart from these applications that assist students in in-class activities, applications, such as 'SelfControl', 'StayFocused', 'RescueTime', etc., support students to focus and avoid

distractions while scheduling applications, such as 'My Study Life' and 'Timetable', help to manage mundane activities properly.

Not only students but educators from all generations should also foster the use of applications to follow the current trend. Applications, such as 'Notability' and 'Squid', are not just a tool for students. Lecturers can employ these applications when preparing course specifications, lesson plans, lectures, assignments, and any other relevant classroom material while using 'Canva' or 'Pixlr Express' to design them with professional graphics and to create classroom blogs. Applications, like 'Explain Everything', are useful in creating lecture slides with instructional video demonstrations.

Generation Z students are reluctant to read texts, yet, prefer visuals and more likely to disengage if they are not pleased with the content. Thus, educators should continuously distract students for a meaningful end by delivering lectures using numerous graphics, breaking the content for a break of video demonstrations, and allowing students to reach for a smart device to surf the internet to find relevant information to the lecture. Further, lecturers can keep their students engaged in assessments differently. For instance, the 'Quizlet application' and 'Hot Potatoes' website are perfect to deviate from traditional assessment settings to exciting activities, such as flashcards, games, puzzles, quizzes, gap-filling exercises, and many more.

Apart from these educating activities, students should be able to publish assignments digitally. Generation Z has grown up in a digital world, where they prefer online materials instead of books. Given that, enabling them to share their assignments with colleagues would motivate them to engage in academic activities in an acquainted learning environment while paving the way to boost peer-to-peer learning and assessment. Peer learning can also be facilitated by letting students create small study groups and connect through 'Google Hangouts' or another live meeting application. Assigning students in a "Social reading" activity is another prolific approach to build a course community while keeping students engaged and enhancing their intellectual competence. Despite the approach initiated by educators, staying connected with students is of pivotal importance. Online video chat applications, such as 'Zoom', 'Top Hat', 'EdConnect', 'Google Hangouts', etc., should be employed by lecturers. Thereby, educators can conduct office hours online, allowing students to demonstrate the progress of assignments, raise questions, and ask for clarifications, whenever they want.

Moreover, Generation Z learners should be approached through promoting their most popular social platforms, such as 'Twitter', 'Instagram', and 'Snapchat'. Through these social media platforms, lecturers can conduct live chats, share relevant materials directly with students, and create hashtags to help them follow online discussions while warranting institutional policies related to safety, security, and privacy concerns. Even shy and reserved students would benefit by participating in these digital course

forums. Conversely, just because students are familiar with these digital platforms since their childhood, it cannot be anticipated that they are fully aware of the correct use of social media. Therefore, institutions should be responsible for maintaining a proper social-media implementation followed by continuous monitoring, and firm rules and regulations.

Social-media presence would help higher education institutes to enhance the learner experience as well, through facilitating a platform to address the academic, personal, and career needs of students. Live chat is productive in getting in touch with Generation Z students via 'Facebook Messenger', 'Twitter', 'Instagram direct messaging', or website live chat. When students need information regarding academic matters, including admission, grades, scholarships, transcripts, examinations, overrides, etc., health, accommodation, administration, counselling, student unions and other societies, and many more, live chat service is a great way to provide students with valued experience. However, the challenge is introducing these online platforms to both academic and non-academic staff as they are not accustomed to such quick response strategies. Given that, necessary training should be provided to relevant staff members because bridging the gap between Generation Z students' expectations and the service rendered by the staff is crucial for a satisfactory learning experience.

Furthermore, Generation Z is a group, which is driven by proper guidance, and when they do, they succeed. Since this digital generation is innately gifted with entrepreneurial spirits, professional development training blended with digital platforms are what they are passionate about seeking to achieve. Hence, the majority of this cohort aspire to pursue an independent career path. Nevertheless, having the first-hand experience on witnessing an economic crisis, Generation Z is quite thoughtful in spending money, and tend to make wise investments. Given that, the higher education professionals should be responsible for providing students with a wonderful learning experience where they fail to regret the investment decision they make on their academic and professional future.

Thus, lecturers can encourage students to take courses from online course providers, such as 'Coursera', 'Khan Academy', 'edX', 'DataCamp', 'Alison', etc., to improve their competence in diverse aspects. Higher education institutions should provide financial assistance for students who are interested in taking online courses. Similarly, learners should be exposed to pragmatic platforms, such as 'TED' and 'TED-Ed', which have the potential to inspire students through sharing ideas, knowledge, and real-life stories.

Moreover, Generation Z is considerate of our planet, in terms of environmental, social, and economic aspects, although they are born to a digitally recognized world. Therefore, this promising generation should be nurtured to change the world for its betterment. Incorporating service-learning activities, which integrates community service, to curricula would

enrich students' learning experience through teaching social responsibilities and strengthening communities.

Nonetheless, some of these techniques are already in effect since higher education institutions have already adjusted their pedagogical approaches to fit in millennials, who share similarities with Generation Z in some perspectives. Yet, if generational disparities exist between educators and the next generation continues, it would have a catastrophic impact on the future of Generation Z. Hence, higher education professionals need to accept this generation as they are because speaking their language can go a long way.

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[1] Trowler, V. (2010). Student engagement literature review. The Higher Education Academy, *11*(1), 1-15.

[2] Heaslip, G., Donovan, P., & Cullen, J. G. (2014). Student response systems and learner engagement in large classes. *Active Learning in Higher Education, 15(1)*, 11-24. doi:10.1177/1469787413514648.

[3] Bowden, J. L. H., Tickle, L., & Naumann, K. (2019). The four pillars of tertiary student engagement and success: a holistic measurement approach. *Studies in Higher Education,* 1-18. doi:10.1080/03075079.2019.1672647.

[4] Cilliers, E. J. (2017). The challenge of teaching generation Z. *PEOPLE: International Journal of Social Sciences, 3(1),* 188-198. doi:10.20319/pijss.2017.31.188198.

CHAPTER 2

The Way Out Challenges in Higher Education: Enhancing Learner Engagement and Experience

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Higher education is considered as the exit point of an individual, who is entering into the job market, and changes taking place economically and socially during the 21st century are surging post-school education, which can be considered as higher education or university education[1]. The performance they exhibit in the working environment will be a reflection of a blend of education, skills, attitudes, and experience gained as a student. The governments around the world are expanding the available opportunities for higher education, to prepare themselves to compete in the knowledge economies[2]. With increased concern on the human capital concept in economic growth[3], the burden of modeling a desired human, is imposing pressure on the education sector globally, particularly on higher education systems. Educator today faces many problems that disrupt the service which they provide. With the increased number of entrants to higher education institutions every year, the maintenance of quality and standards in the education service provided is strongly challenged, which has created the absence of a satisfactory level of student engagement is common around the globe[4]. However, as mentioned by Hiver et al[5], the amount and the quality of student engagement is a combined result of the learner's environment and past learning experience. Adding further, the enhanced experiences provided through utilizing advanced techniques in teaching and learning environment, will make students more engaged in education[6]. Therefore, it is worth identifying the relationships existing among these concepts, to make the student be actively engaged in learning, and to confirm that the experience achieved is up to the required quality.

Engagement

Engagement refers to the quality of a learner's involvement in academic-related activities. Engagement is an action exhibited by the students through active involvement in their educational experience, in both academic and professional settings, and when they can apply the experience gained in a meaningful way [6,7]. Lawson and Lawson[8] referred engagement

as an action. Referring to the definitions, it is thus clear that engagement is an output showed through a set of positive behaviors towards the education effort. The learner's engagement has been identified as an essential input for meaningful learning or instructional success[5]. A learner's level of engagement is an indication of effort vested by the learner in a particular matter, in terms of mental energy and psychological resources. Therefore, it is strongly believed to have a link with the level of motivation of the learner[9]. Again it must be noted that motivation and engagement are two dissimilar concepts, where motivation reflects the intention and engagement represents an action[10]. However, at the very beginning, the engagement was limited to the reduction of dropouts, but today it has gained more scope by extending to an assurance of higher student performance, as a result of higher engagement. The engagement has three interrelated dimensions asbehavioral, emotional, and cognitive[11]. Fredricks, Filsecker, & Lawson[9], cited in Connell[32] described the behavior as participation, attention, persistence, absence of disruptive behavior, positive conduct, and effort. The emotional dimension includes the positive reactions towards the teachers, colleagues, and other people that the learner meet, and a sense of belongingness. The cognitive aspect covers the self-regulated learning, effort to understand complex ideas, and use of deep learning strategies[9]. Several researchers have identified more than three dimensions, which were mentioned above[13], although the new types identified can be classified broadly into the categories identified by Fredricks et al.[11], the individual effort and involvement are key determinants of collage impact the institutions must focus on enhancing the experience through academic, interpersonal and extra-curricular offerings[6].

Experience

Chronbach[33] and Harris and Schwahn[34] have defined learning in relation to experience gained during the process of learning[14]. As per them, learning is the behavior change that takes place as a result of experience. Therefore, the importance of the learning experience doesn't need many explanations. Kolb's learning cycle, which is coming under experiential learning, where experience is a key player in the learning process.[14] The learning cycle constitutes four learning abilities as Concrete experience, Reflective observation, Abstract conceptualization, and Active experimentation[16]. Hence experience will not merely support learning, but, experience, reflecting, thinking and acting will form successful learning. The experience can be identified as the people create meaning and purpose in their lives by constructing life stories[5]. According to the Glossary of Education Reform, the learning experience is defined as "any interaction, course, program, or other experience in which learning takes place, whether it occurs in traditional academic settings (schools, classrooms) or non-

traditional settings (outside-of-school locations, outdoor environments), or whether it includes traditional educational interactions (students learning from teachers and professors) or non-traditional interactions (students learning through games and interactive software applications)"[17]. A study by Borland & James[18], introduced five criteria to measure the quality of the experience gained by a student. They are the levels of student guidance and support; learning resources; teaching, learning, and assessment; curriculum design and quality assurance. The measurement and assurance of the quality of academic experience of a student are important as they reflect the success of the implemented policies[28]. This identification will enable to address the problems pertaining to each area and to propose a suitable path to recognize and treat any factors which hinder the quality of the learning experience.

What Drives the Success of the Learner Experience and Engagement?

Teaching-Learning Environment and Infrastructure

A closer observation of the above description points out that, a learning environment is a force, which is making an influence on both learner engagement and experience. Therefore, addressing the changes taking place in the learning environment is also necessary for making correct decisions to enhance learner engagement and experience. Fraser[20] mentioned that the learning environment of every sector of education has undergone a noticeable change in terms of growth, diversification, and internationalization. Even though the broader nature of the concept interrupts the construction of a definition a positive academic environment must foster both the professional and personal development of a student[28].The higher education institutions must focus on creating a suitable environment, which ensures that every student receives an equal opportunity for learning in the diverse background of higher education. This will require contentious research work, on student perception of the experience they gain in a particular environment[22].

The teaching environment is a very broad concept which consists of everything involved in, how teaching is carried out and everything which influences how the teacher and the student experience learning[31]. This will include both physical and non-physical elements. The physical environment can also be regarded as the infrastructural facilities provided at the university. This may include the lecture halls, libraries, computer laboratories, accommodation, canteens, etc. the physical environment is a must in making a favourable experience for the student[23]. Although it is hard to define the best physical layout of a teaching environment according to student perception it must provide immersion, connectedness, knowledge, and inspiration[31].Therefore both inside and outside of the classroom, an academic environment must assure the achievement of the above-mentioned requirements of the students.

As described by Sebastian & Ingerslev[28] the layout in a class can either be hard programmed or soft programmed. The hard programmed classroom is less flexible, allowing limited teaching-learning methods. A traditional lecture theatre is one example, where mostly lecturing can be practiced. Therefore, in such a layout, it will be difficult to assure that the student engagement is up to the expectations.

Opposite to this, the soft programmed classrooms carry more flexibility allowing to switching between different teaching-learning methods. Interactive learning centres, which enable the teacher to apply more teaching-learning methods, will be a favourable atmosphere for students, by allowing them to grasp knowledge through different methods.

The environment outside the classroom is another factor that is critical in supporting different learning techniques, formal and informal collaboration among students. For example, the residential facilities provided at the university promote more collaboration among the students[30]. This will fuel the informal relationships among the students in an environment, where there are an increasing diversity and internationalization among the students. In turn, the developed relationships will be an aid to promote university culture among them and to uplift the collaboration required in practicing teaching techniques such as group discussions and group work.

Sebastian & Ingerslev[28] mentioned the non-physical environment, which includes the culture of the institution, rules, and regulations of the institution, based on which the students are supposed to behave in academic-related activities. However, both physical and non-physical teaching environment is vital to create a positive atmosphere in a student mind on learning, though it removes barriers and facilitates smooth learning. The positive impact would be on the learning experience. At the same time, a favourable teaching environment will promote student engagement by encouraging different teaching methods without limiting them to traditional methods.

Academic Emotions

Emotions have received much attention as a factor shaping the engagement of students, in the very recent past[13]. A single student will pose many emotions when engaging in higher education such as; enjoyment, interest, hope, pride, anger anxiety frustration, and boredom. In previous studies, it is proved that emotions are imposing an impact on many areas of a student, such as learning, achievement, health, and personality development. Emotions will shape the different types of engagement differently. On the other hand, the emotions are influenced by the experience that a student gain in the learning environment. If the student experiences a good atmosphere the student will be more committed towards

academic activities, hence be exhibiting higher achievements. But the opposite will happen if the academic experience is bad[7].

Curricular and Teaching-Learning Methods

The curricular, intended learning outcomes, and teaching-learning methods cannot be discussed in isolation. For a higher education provider to be successful in learner engagement and experience, the constructive alignment of the above three is compulsory[27]. The AACSB [1]accreditation standards describing the role of curricular on student engagement states that a curriculum must facilitate active engagement through offering diverse techniques such as task-related reading, course participation, knowledge development, projects, and assignment. These techniques will, in turn, encourage experiential and active learning, by catering to different needs of a diverse collection of students, and will improve their capability to apply knowledge in practice[6].

The teaching-learning models used in the universities are the focus in answering the question of how do we structure the program to facilitate the student to learn it? [21]. Thus, it is clear that through the employment of different teaching-learning methods the higher education institutions expect their students to engage in education. The learners enrolled in higher education institutes are categorized as millennials who always seek the aid of technology in every aspect of life, including education[32]. Therefore, the aid of technology is vital in delivering the service of higher education institutions as well. Tech Com states that either student- or teacher-centered methods can be adopted in teaching and learning, which again can be categorized according to the degree of technology usage. Higher education involves adult students, whose intentions and motivations best match with student-centered learning[26]. However, the use of technology needs much attention when it comes to the accessibility of the students. The aid of technology can be considered as a way of enhancing the learner engagement and experience, but the level of such involvement will depend on the infrastructural facilities available. Another concern on learning method is that, according to the students' past learning experience, self-learning ability and background will make students seeking for different learning methods. Therefore, through the identification of such issues, the learning engagement and experience can be enhanced. The issues relating to large classes must also be looked into when it comes to engagement and experience[24].

Challenges to be Faced by Higher Education Providers

The changes taking place in the educational environment have created many concerns for higher education institutions around the world. The expanding size of the class increased diversity, and internationalization

among the students, increased concern on the use of technology are some of the driving forces behind the challenges faced by the education providers.

The widening of the need for more and more human capital, have forced the higher education institutions to expand the opportunities provided. Increased class size has created many concerns, including the relevance and applicability of traditional teaching-learning techniques. This also creates concerns about the quality and equity of learning[24].

As far as the very first definitions of learner engagement i.e. reduction of dropout rates are concerned, the universities are making heavy spending on making the first-year experience a rich one. This is because a higher dropout ratio is reported among the first years. Despite the efforts taken by the universities, still the first-year students are reporting dropout rates. The dropout rates have not reduced adequately compared to the efforts of the universities. Therefore, the universities face barriers in attaining the target level of engagement among the students[29].

The mismatch between the teachers and study program's assumptions on the expectation of student and about the student, and student expectation about the teaching and the study programme is common. The programs are designed to cater to the general set of students, without considering the individual needs of the students who are engaged in the learning. But with the increased enrolments to universities, the diversity of the student needs to be fulfilled by a specific course has gained a wider scope. Thus, it has become difficult for a single lecturer to fulfil the diverse needs of every student, which in turn has caused a reduction in student engagement.

The students in every stage of the education process have become victims of the academic inflation. Thus, the job market needs them to be more qualified within a shorter period of time and the academic environment is imposing a higher pressure on every student[28]. Therefore, the academic experience a student face in the academic environment, the students pick up the convenient strategy and become passive learners, rather than a critical thinker or lifelong learning since they wish for the completion of the degree.

Ways of Improving the Experience and Engagement

Although the authorities have a prescribed format of obtaining the student feedback, every faculty must focus on developing their own format of obtaining feedback. This will help to address the special areas relating to a particular course unit[33]. Student feedback plays an important role in increasing student engagement as the data provided in such a survey will make the authorities aware of what areas the students perceive developments are needed. As the key stakeholder of a higher education institution, the student requirements must be placed on the top in decision making.

During the designing phase of the curricular, the authorities must pay attention to the constructive alignment of the courses with the intended learning outcomes (ILOs) and different teaching-learning techniques. The identification of relevant high impact activities is vital, so that fulfilment of ILOs become a reality rather than a set of words fulfilling the course designing requirement. As stated by[6] the high-impact activities will make the student gain an educational experience, which requires their engagement in the process, without limiting to the traditional lecture theatre. This consists of different activities such as creative problem solving, collaborative work with other students, and apply knowledge in a real-world setting. Thus, will create a student who has grasped both the academic and professional experience, thus make them more successful in performing their work-related tasks.

The student can gain a better understanding of the constructive alignment among the curricular, ILOs, and teaching-learning methods through the use of a visual organizer. This enables those to understand the flow of the subject and the rationale about different methods used in teaching. Thus, the student will gain a better experience by taking part in the learning process. The enrichment in the experience will make the student more engaged in the process[34].

The university administration and the academic staff must expose the rationale and connection laying behind different high-impact activities and the intended learning outcomes. Through such practice, the students will be encouraged to provide a higher engagement to the academic activities[22].

The engagement of students in a large class can be increased through the adoption of teaching techniques such as providing reading material before the lesson, creation of buzz groups, encourage post-session walk-outs so that students can access each other's thoughts and insights, and provide encouragement for deep learning rather than surface learning[24].

When designing classrooms, higher education institutions must make sure that the layout supports different learning techniques, enabling the student to engage in learning, via a variety of activities, rather than grabbing knowledge only through traditional lecture sessions[31].

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1. David, M. (2007). Equity and Diversity: Towards a Sociology of Higher Education for the Twenty-First Century? *British Journal of Sociology of Education, 28*(5), 675-690.
2. Hunt, L., Chalmers, D., & Macdonald, R. (2012). Effective classroom teaching. In L. Hunt, & D. Chalmers, *University teaching in focus: A learningcentred approach* (pp. 21-37). Melbourne: ACER Press.
3. Power, C. (2014). Education Development: Importance, challanges and solutions. *The Student Economic Review, xxviii*. 149-157.

4. Johannsen, B. F., Ulriksen, L., & Holmegaard, H. T. (2015). Who are the students? In L. Rienecker, P. S. Jorgensen, G. Holt, & J. Dolin, *University Teaching and Learning* (pp. 115-133). København: Samfundslitteratur.
5. Hiver, P., Zhou, A., Tahmouresi, S., Sang, Y., & Papi, M. (2020). Why stories matter: Exploring learner engagement and metacognition through narratives of the L2 learning experience. *System*, 91, 102260.
6. Shavers, C. L., & Mitchell, R. B. (2019). High-Impact Educational Experiences in Colleges of Business. *e-Journal of Business Education and Scholarship of Teaching*, *13*(1), 1-12.
7. King, R. B., & Gaerlan, M. J. M. (2014). High self-control predicts more positive emotions, better engagement, and higher achievement in school. *European journal of psychology of education*, *29*(1), 81-100.
8. Lawson, M. A., & Lawson, H. A. (2013). New conceptual frameworks for student engagement research, policy, and practice. *Review of Educational Research*, *83*(3), 432-479.
9. A Fredricks, M Filsecker, MA Lawson - . (2016). Retrieved MAY 2020, from https://www.sciencedirect.com/science/article/pii/S0959475216300159
10. Reschly, A. L., & Christenson, S. L. (2012). Jingle, jangle, and conceptual haziness: Evolution and future directions of the engagement construct. In *Handbook of research on student engagement* (pp. 3-19). Springer, Boston, MA.
11. Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of educational research*, *74*(1), 59-109.
12. Pekrun, R., & Linnenbrink-Garcia, L. (2012). Academic emotions and student engagement. In *Handbook of research on student engagement* (pp. 259-282). Springer, Boston, MA.
13. Knowles, M. (1990). *The Adult Learner: A Neglected Species.* Houston: Gulf Publishing Company.
14. Petkus Jr, E. (2000). A theoretical and practical framework for service-learning in marketing: Kolb's experiential learning cycle. *Journal of Marketing Education*, *22*(1), 64-70.
15. *Glossary of Educational Refomrs*. (2020). Retrieved 2020, from https://www.edglossary.org/learning-experience/
16. Borland, J., & James, S. (1999). The learning experience of students with disabilities in higher education. A case study of a UK university. *Disability & Society*, *14*(1), 85-101.
17. Teach .Com. (2020). Teaching Methods, 2020: https://teach.com/what/teachers-know/teaching-methods/.
18. Mørcke, A. M., & Rump, C. (2015). University teaching and learning-models and concepts. In *University Teaching and Learning* (pp. 93-104). København: Samfundslitteratur.
19. Finley, A., & McNair, T. (2013). *Assessing Underserved Students' Engagement in High-Impact Practices.* Washington: Association of American Colleges and Universities.
20. Fraser, B. J. (2002). Learning environments research: Yesterday, today and tomorrow. In *Studies in educational learning environments: An international perspective* (pp. 1-25). Hackensack: World Scientific Publishing.

21. Maringe, F., & Sing, N. (2014). Teaching large classes in an increasingly internationalising higher education environment: Pedagogical, quality and equity issues. *Higher Education*, *67*(6), 761-782.
22. *Glossary of Educational Refomrs*. (2020). Retrieved 2020, from https://www.edglossary.org/learning-experience/
23. Pierce, J. W., & Kalkman, D. L. (2003). Applying learner-centered principles in teacher education. *Theory into Practice*, *42*(2), 127-132.
24. Cowan, J., George, J. W., & Pinheiro-Torres, A. (2004). Alignment of developments in higher education. *Higher Education*, *48*(4), 439-459.
25. Divaris, K., Barlow, P. J., Chendea, S. A., Cheong, W. S., Dounis, A., Dragan, I. F., ... & Mo'nes, M. (2008). The academic environment: the students' perspective. *European Journal of Dental Education*, *12*, 120-130.
26. Everett, M. C. (2017). Fostering first-year students' engagement and well-being through visual narratives. *Studies in Higher Education, 42*(4), 623–635.
27. Cheng, M. W. T., & Chan, C. K. Y. (2020). Do university residential experiences contribute to holistic education? *Journal of Higher Education Policy and Management, 42,*(1), 31-48.
28. Horst, S. & Ingerslev, G. H. (2015). Teaching environment. In *University Teaching and Learning* (pp. 105-114). København: Samfundslitteratur.
29. Kumar, S., & Bhandarker, A. (2017). Experiential learning and its relevance in business school curriculum. *Developments in Business Simulation & Experiential Exercises, 44*(1), 244-251.
30. Egesah, O. B., & Wahome, M. N. (2017). University students' learning experiences: Nuanced voices from graduate tracer study. *Journal of Higher Education in Africa*, *15*(1), 43-56.
31. Awidi, I. T., Paynter, M., & Evers, U. (2020). Visual Organizers and Scaffolding the Student Learning Experience in Higher Education. *Journal of Educational Technology Systems*, *48*(4), 518-538.
32. Connell J P. (1990). In Context, self, and action: A motivational analysis of self-system processes across the life-span. In D. Cicchetti (Ed.), The self in transition: Infancy to childhood. Chicago: University of Chicago Press. .
33. Lee J Cronbach. (1963). Educational psychology. New York : Harcourt, Brace & World.T. L. Harris and W. E. Schwahn. (1961). Selected Readings on the Learning Process. New York: Oxford University Press.

CHAPTER 3

Engagement in Online Deliveries During COVID 19: Challenges and Opportunities

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Introduction

With the spread of COVID 19 in Sri Lanka, the government extended a nationwide curfew to control the people mobility. Few towns had to be locked down. All the universities were closed down. E-learning became the rubric for all academics and students. A work-home-plan was implemented despite its practical limitations. Switching to online studies during the pandemic became a novel experience in spite of whatever digital platform accessible free of charge. However, the success of online education in a pandemic situation depends on how holistically the impending issues are considered. This paper is to address this knowledge gap particularly when the lecturers and students alike, have to suddenly navigate online deliveries without any prior formal planning, training, or otherwise. Indeed, COVID 19 will "force educators to revolutionize the way they teach, moving from a lecture-listen model to an interactive, learn-by-doing model." As such, the issue is how well it could be suited to capture the wave. This paper is to address the foregoing issues where there is no previous acquaintance with the delivery of courses online.

Characteristics of E-learning

Urdan and Weggen[1] postulate that e-learning is "the delivery of content via all electronic media, including the internet, intranets, extranets, satellite broadcast, audio/video, interactive TV and CD ROM". Gerjets, Scheiter, and Catrambone[2] guide that 'e-discussion boards, forums and wikis' facilitate shared learning to ripen teamwork skills. Obviously, e-learning is a kind of distance learning, privileged by the digital tools[3]. There has been tremendous growth of online education during the past decade as access to the internet continues to proliferate[4]. In this regard, numerous terms abound such as distance learning, remote learning, distributed learning & online learning. Even though it is in a variety of terms, the function & outcome are communal[5].

A feature for learning in the usual "classroom environment is the social and communicative interactions between student and teacher, and

student and student"[6]. Effectiveness in online learning is high and at least it is equivalent to the traditional learning method like face-to-face learning[7]. In general, there are three kinds of interactivity that affect online learning, namely interaction with content, interaction with instructors, and interaction among peers[8]. Later, learner-interface interaction was added to these dimensions[9]. Brooks[10] noted that attitudes affect online education. In addition, the accessibility of the interface and flexibility of the online delivery method are also challenging the online education[11].

Academics' Shared Viewpoint

A series of telephonic inquiries was conducted focusing mainly on university administrators and senior academics. 32 interviewees were purposely selected in this study. A narrative analysis was conducted to derive the final standpoint. The findings of the literature survey helped generate questions related to different parts of this inquiry. Though it was not a formally structured interview, 32 individual senior academics were asked to elaborate some of the experiences on online deliveries that were viewed as pertinent. These academics were basically presenting their views regarding online delivery in terms of Concept, Context, Content, Adaptation, Approach, Digital divide, Tools, Workload, Assessment, Process, and Recommendations. All are a precursor to their impression that online delivery was challenging.

Table 1 offers a shared viewpoint as a result of this inquiry.

Table 1: Narrative of the Telephonic Inquiry

No.	Element	Academics' Shared View
1	Concept	Some solitary approaches used by online learning encourage passive learning. Blended learning would have been ideal.
2	Context	Maintaining social interaction becomes quite harder. The question of time difference does not arise in Sri Lanka.
3	Content	Some people's information about what online education is or could be is outdated. Copyright issues arise.
4	Adaptation	Teachers have no early sign-on shifting to online learning. There is no buffer arrangement.
5	Approach	Students expect a dialogue-driven format.

6	Digital divide	Service can be slow when everyone is trying to use videoconferencing at once. Anxiety and depression get worse for marginalized students who already live with scarcity, less social capital, and less structure. Internet coverage is not good enough and the speed of connection is low.
7	Tools	Some online conferencing platforms, such as Zoom, will be overloaded and could crash. There are some students who don't have laptops.
8	Workload	Some learning experiences cannot be replicated digitally.
9	Assessment	Plagiarism is a challenge. No software detecting overlap is available.
10	Process	"Not all faculty members are equally adept at harnessing related technology and managing virtual classrooms"
12	Recommendations	e-learning policy, enhanced digital platforms, enhanced IT infrastructure, support, and troubleshooting, enhanced interaction between lecturers and students

The context is university colleges. The overall findings suggest that the attitude is not pessimistic. However, no one has prior experience in using e-learning for teaching purposes, but a few had accessed it for their learning activities. Those who have basic IT skills and participated in training workshops are confident enough to embrace the system, but those with poor IT competency opt to slowly adopt. Online without being blended with prior face-to-face learning is impeding the adoption of e-learning. The lecturers find that the data and Wi-Fi access is not available to all. Meanwhile, insufficient internet capacity and low and disturbing internet connectivity exacerbate the problem. Inadequate capacity to accommodate a large number of students on the internet is again a problem. Lectures are of the view that online teaching has limited the use of mathematics and technology-related modules. Students who have been disadvantaged by the lack of electricity have been the most vulnerable. Both the lecturers and students had a concern regarding the weather conditions such as thundering during the monsoon period that interrupted online access.

A Future Direction

The aforementioned challenges of implementing e-learning make it imperative for the universities and the government to work closely and come with strategies so as to meet the educational needs of the country. Table 2 offers a series of recommendations implementable in three stages.

Table 2: Solution Matrix

1	**Immediate Measures** ▪ Seek remote teaching tools and online platforms free of charge. ▪ Provide students with guidance on how best to approach their studies from home ▪ Perform basic troubleshooting ▪ Offer online trauma counseling ▪ Establish virtual peer learning circles ▪ Seek zero-rate policies that facilitate learning via smartphone. ▪ Make sure all online apps work on mobile devices ▪ Figure out how to buy or rent Wi-Fi hotspots and plan for devices and hotspots. ▪ Adopt GroupMe, Slack, and WhatsApp for classwork. ▪ Subsidize data on mobiles ▪ Communicate with non-participants privately to encourage discussion ▪ Include virtual meetings, live chats, or video tutorials to maintain a human connection. ▪ Assign duos or small groups and organize a live session where instructors encourage debate and answer questions.
2	**Short-Term Measures** ▪ Use of online proctoring tools for assessments. ▪ Encourage healthy study habits. ▪ Focus on facilitating flipped classrooms, Moocs, and other digital innovations and provide practical tips shared by fellow faculty and staff on the popular messaging platform WeChat. ▪ Provide different modes of interaction; webcam; classrooms with dedicated infrastructure to video lectures; online learning platforms like Canvas, Blackboard, and Moodle as well as live-streaming options like Zoom and Skype

- Ensure that programs are able to be supported online.
- Encourage instructor-student interchanges in virtual classrooms managed through learning management systems.
- Offer short webinars in which instructors can quickly learn the basics of videoconferencing.
- Provide feedback through online knowledge checks, comments on collaborative documents, and chat to keep students motivated and moving forward.

3	Long -Term Measures

- Introduce e-learning policies.
- Increase funding for e-learning, ICT infrastructure, research, capacity building, and awareness creation.
- Relinquish copyrights to lecturers who write quality and peer-reviewed modules.
- Revisit cognitive and non-cognitive development with e-learning.
- Licenses or access to technology such as Zoom, Respondus, and Microsoft Teams available to all teaching staff and students.
- Offer text-based interactive mechanisms such as blog-style formats.

The outcome would in no doubt help to enhance the capacity of the academic community in various ways to meet similar satiation in the future. The study provides three-stage guidelines as to how educational entities are able to strengthen their capacities in terms of organizing their internal resources, capitalizing their strengths, exploiting the opportunities, minimizing shortcomings, and facing the challenges, all together for an orderly transition from traditional in-class deliveries to online deliveries.

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[1] Urdan, T. A., & Weggen C. C. (2000). *Corporate e-Learning: Exploring a new frontier.* San Francisco: W.R. Hambrecht + Co.

[2] Gerjets, P., Scheiter, K., & Catrambone, R. (2003). Reducing cognitive load and fostering cognitive skill acquisition: Benefits of category-avoiding examples. In F. Schmalhofer, R. Young, & G. Katz (Eds.), *Proceedings of EuroCogSci 03. The European cognitive science conference 2003* (pp. 133–139). Mahwah, NJ: Erlbaum.

[3] Sangrà, A., Vlachopoulos, D., & Cabrera, N. (2012). Building an inclusive definition of e-learning: An approach to the conceptual framework. *International Review of Research in Open and Distance Learning, 13*(2), 145-159

[4] Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous learning networks*, *6*(1), 21-40.

[5] Volery, T., & Lord, D. (2000). Critical success factors in online education. *International Journal of Educational Management, 14*(5), 216-223.

[6] Stubbs, M. (2011). *Language, schools and classrooms (Vol. 200)*. London: Routledge.

[7] Swan, K. (2004). Learning online: A review of current research on issues of interface, teaching presence and learner characteristics. *Elements of quality online education: Into the mainstream*, *5*, 63-79.

[8] Moore, M.G. (1989). Three types of interaction. *American Journal of Distance Education 3*(2). 1-6

[9] Hillman, D.C.A., Willis, D.J., Gunawardena, C.N. (1994). Learner-interface interaction in distance education: An extension of contemporary models and strategies for practitioners. American Journal of Distance Education, 8(2). 30–42.

[10] Brooks, L. (2003). How the attitudes of instructors, students, course administrators, and course designers affects the quality of an Online Learning. *Online Journal of Distance Learning Administration*, *6*(4). Retrieved from: https://www.westga.edu/~distance/ojdla/browsearticles.php

[11] Lyons, J.F. (2004). Teaching US history online: Problems and prospects. *The History Teacher, 37*(4). 447-456.

CHAPTER 4

Enhancing Learner Engagement – Towards the Success in Higher Education

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Higher Education – The key to success

Higher education is a great asset for the individuals who receive it, to the society they represent and to the economy. Through the higher education, personal development could be acquired in the form of knowledge, skills, and attitudes. Integration of knowledge, skills, and attitudes create a competent individual and it is considered to be a prerequisite for adequate functioning on the job. Higher education does not only deliver knowledge, skills, and attitudes, but also provides a vibrant research environment that produces inventions and innovations to make a better future.

In the economic aspects, people with higher education tend to earn more and have a lower probability of unemployment. As per the U.S. Bureau of Labor Statistics 2011, those with less than a high school diploma experienced a 14.1% unemployment rate in 2011 and average weekly earnings of $453 but for every increase in the level of educational attainment unemployment goes down and earnings go up, indicating 3 to 4 times greater earnings and 5 to 6 times lower unemployment at the highest levels[1]. Moreover, higher education creates a knowledge-based economy which is a key driver of economic growth.

Nevertheless, economic returns of higher education are well known with respect to the enhanced earning, a broader array of non-economic benefits in terms of health and citizenship are underrated. Higher education helps the smooth operation of communities and societies and enhancement of personal lives. When a person has more knowledge, they are inclined to involve more actively in societal activities such as volunteering, interpersonal trust, and voting. Further, they are more tolerant towards other races. Knowledge and skills gain and develop over time through higher education promote a healthier and content lifestyle. As an example, smoking and obesity are less pronounced among people with 4 years' college degrees than people with a lower educational level.

These strong pieces of evidence-based distinct benefits of higher education are sustained across a wider section of the population. It will ultimately result in enhanced quality of life for the individuals, knowledge-based economic growth, and more civilized and sensible society. Thus, it's going to be the success we achieve as an individual and as a society through higher education.

Present Changes and Challenges in Higher Education

Increased Student Number

In light of eminent benefits higher education offers, greater demand and participation is inevitable. Thus, more and more people are wanting to take part in higher education more than ever before. The number of student enrolments have been growing and 13.8% to 29% increase has shown from 1990 to 2010[2].

High Competition in the Job Market

Highly competitive job market has been created as a consequence of higher education. The fresh graduates, having been filled with knowledge but carrying limited experience and exposure to face highly dynamic challenges and real-life problems. However, the business world is seeking individuals with skills such as problem-solving, group work, collaboration, and integrated approaches to problems and attitudes more than solely depending on the knowledge student acquired through higher education.

Demographics (Gender, Socio Cultural Make up)

With the rising number of applicants in higher education, a wider and diverse pool of students take part in higher education resulting in significant shifts in student demographics. For example, over the past twenty years, major transition in gender balance from predominantly male to predominantly female is evident in many institutions worldwide. Further, ethnic and socio-cultural makeup has been changed by virtue of jurisdiction migrations and immigrations.

Learning Styles and Attitudes for Learning

The learning styles of the millennial students are perceived to be diverse from the previous generations and their attitudes towards learning also different.

This changing and challenging nature of the student population entering the higher education, make the educators occupied in searching for best-suited learning environment for the students which leads to the success.

What is Learner Engagement?

To accommodate the present changes and challenges in higher education, institutions have had to adjust their educational system to ensure

that they remain appealing and improve engagement to a broader and diverse group of applicants. Learner engagement is deemed to be a key driver of the development of learning communities in higher education and in university success, which is understood as improved student participation, a higher level of course completion and secure employment along with the positive attitude towards lifelong learning.

Several definitions have been adopted for "Student Engagement" in higher education. As proposed by Chapman (2003) student engagement is 'students' cognitive investment in, active participation in and emotional commitment to their learning'. It also defined as 'students' involvement with activities and conditions likely to generate high quality learning' as offered by The Australian Council of Educational Research. In a simplified version, engagement is referred to as 'the time, energy, and resources students devote to activities designed to enhance their learning at University'[3].

The challenging task is to come up with an approach for higher education which inspire the students to take control of their leaning, to be engaged in learning and research and foster them to develop the skills. Since the 1990s it has been well researched the way students engage in their studies and what students and the institutions have done to enhance the learner engagement[2].

Different approaches to engagement research have been identified; student agency and motivation, transactional engagement, institutional support, and active citizenship is one such approach. Another group of researchers has identified it as behavioral, emotional, cognitive, and sociocultural theories of engagement to reshape this phenomenon.

Improving Learner Engagement – Key facets

Motivation and Agency

Students are their own learning agents who have the ability to achieve their goals. Self-belief is considered to be a key attribute in motivation. Also, bringing self-theories into learning influences motivation, agency and engagement. Thus, creating and taking opportunities to build and enhance student's self-belief will result in enhanced student engagement. Moreover, when providing opportunities for students to work both autonomously and with others and to develop their sense of competence to achieve their own objectives, they are more likely to be motivated, to engage, and succeed.

Transactional Engagement

In transactional engagement, students and teachers engage with each other. Teaching and teachers are central to the engagement. Study findings acknowledge that students tend to work harder, get benefited from studies, willing to express their views, and more likely to engage when the teacher

is well prepared, sensitive to students, approachable, demands high standards and challenge[4]. At the same time, learning relationships are significant in student engagement. Active learning in groups, peer relationships, and social skills are positively associated with student engagement, practical competence, and student gains in personal and social development. Further, creating educational experiences that are enriching, challenging, and extend students' academic abilities are successful in engaging students.

Institutional Support

Institutional cultures play a key role in student engagement. Students are more engaged in learning when they feel that they are accepted and have the sense of belonging. As the student body diversifies and socio-cultural background changes higher educational institutes have to adapt accordingly to promote student engagement. Another aspect is investing in various support services such as orientation programs, quiet studying places, libraries to settle into academic life. Students' expectations change from time to time and in different generations. Institutions must understand their expectations and should adapt to respond to them. Thereby, an environment which is conducive for learner engagement is created.

Improving Learner Engagement – What Can We Do as Academics?

Pedagogical Approaches

A diverse student body is one of the fastest-growing trends in current higher education, not only in terms of learning style, learning speed, and pre-entry educational experience but also socio-economic background, ethnicity and orientation, linguistics, and communicative competencies. Thus, more inclusive curriculum addressing the above differences, more relevant and challenging curriculum considered to foster student engagement.

A curriculum alone is incompetent to improve student engagement. A curriculum taught using active, collaborative, and problem-based learning, directs towards the success. Using high-quality technology-enhanced activities also another aspect that stimulates learner engagement.

Encouraging Fully in-Class Participation

Class participation allows students to improve their learning experience. However, it's a great challenge to actively engage them in lessons. Especially, the student from different backgrounds, ethnic groups, and countries shows a varying degree of participation in the classroom. For instance, there may be particular initial difficulties for those who are introverted, lack confidence, or are culturally trained not to speak up in class. In-class activities either individual activities or group activities are being used

as an active engagement promoter in higher education. It allows students to take leadership, work collaboratively, or autonomously which does not encourage in a conventional classroom environment. Thus, learners will inspire more learning motivation.

Course Feedbacks and Pre-Course Surveys

The student feedback system is a standard practice in most higher education systems. It will be greatly benefited when it is practiced for every lesson rather than a whole course module. In order to enhance student engagement, student feedbacks need to be addressed in a proper manner. It will assist in developing new and different course material, advancing the existing course materials and developing more interesting activities and thereby improve the lessons accordingly.

Pre-course surveys, though it does not appear to be a common application, too positively influence student engagement. Sometimes, teachers do not have a clear idea on students' abilities. They could be overestimated or underestimated. Pre-course surveys allow the teachers to gain a better perception on student's abilities and thus, better adjustments in the courses and lessons.

Problem-Based Learning

Problem-based learning (PBL) "is the learning that results from the process of working toward the understanding or resolution of a problem"[5]. Six main features of PBL are; student-centered learning, learning involves in small student groups, problems are the organizing focus and stimulus for learning, teachers are facilitators or guides, problems are the vehicle for the development of clinical problem-solving skills, new information is acquired through self-directed learning. According to the quantitative and qualitative evidence on PBL, it could significantly enhance the learning behavior of the students. It has shown improved motivation to succeed and improved reasoning and processing skills which were both transferable and persistent throughout the undergraduate life.

Embrace the Technology

In today's world technology is something we cannot disregard. Instead of viewing technology as a distraction, educators can look into the bright side of advancements in technology and incorporate them in education to experience the true virtue of it. Many technologies enabled learning environments are now widespread owing to the recent advance in internet access and mobile phones. Overall outcomes including collaboration, engagement, and attitudes are improved by the technology-based active learning atmosphere.

Technology has the ability to improve the higher education sector through making teaching and learning processes more intensive, improve

participation and engagement in courses, enhance student self-regulation and self-efficacy. "Technology can amplify great teaching, but great technology cannot replace poor teaching"[6]. Thus, technology along with sound pedagogy, correct tools, and proper planning would ensure better outcomes.

Several authors have studied different technologies used in higher education. Online discussion boards, learning management systems (LMS), general websites, general campus software, and videos, social networking sites, digital games, wikis, web conferencing software, and blogs are the most common technologies popular among students.

Some drawbacks are inevitable although there are more distinct benefits that technology offers. In developing countries including Sri Lanka, the university system is not fully equipped with modern technologies due to the lack of funding and capital investment. At the same time, available technologies are not developed to their maximum capacity to facilitate students learning without any interruption. Moreover, all the students do not have access to the internet, computers, or smartphones in an equal manner to at least get the benefits of the available technologies. Thus, improving student engagement through technology is quite challenging. This will greatly affect when it comes to distance learning or online teaching and learning.

Integrating Social Life and Cultural Diversity

A diverse student body is one of the fastest-growing trends in current higher education, not only in terms of learning style, learning speed, and pre-entry educational experience but also socio-economic background, ethnicity and orientation, linguistics, and communicative competencies. Integrating these socio-economic, cultural, and communicative diversities will result in successful transition to and through higher education. Social integration through social networks consists of teachers, peers, friends, and family assist students in numerous ways; help students to cope with stress and difficulties, provide academic support, promote self-esteem and a sense of wellbeing that steering towards academic success.

A variety of strategies are accommodated by educators to enhance engagement through social and cultural integration. Student orientation programs are designed to improve social and cultural interactions as well as to provide preliminary guidance. Students coming from diverse backgrounds feel welcomed, valued, accepted, and safe through these programs. Students from different backgrounds may speak about their cultures and country. Student activities such as multicultural shows, multi-culinary nights are organized. The aim of such practices is to reduce the feeling of disconnection, confusion, exclusion, or alienation that students experience and by this mean improve academic engagement.

As a practice in our faculty variety shows, outbound training, mentoring sessions, meet and greet sessions are organized with the participation of both students and the teachers.

During the in-class activities students may be paired or grouped to work collaboratively to perform a specific task; a presentation, debate, quiz competition, new product development, and various other tasks. Further, community-based learning or learning through volunteerism can introduce civic and social issues in the learning process. One such course module introduced by the Faculty of Livestock, Fisheries and Nutrition is LinCom (Linking with community) in which students voluntarily engage to solve and help problems in a community which they have identified. For an example, a group of students helps school children improve their nutritional status by providing nutritional consultancy and diet planning while another group of students assists a group of small-scale ornamental fish hobbyists to improve their business to gain more profits. In these circumstances participating actively in social causes could enhance their engagement.

Nevertheless, in the higher education system strategies to improve student-teacher interactions have given less attention especially in the Sri Lankan context. Thus, it's worthy to give more consideration on that. Most of the students are very reluctant to approach their teachers. Being friendly, empathetic, being more accepting and willing to help them and creating an unstressed environment in the classroom could change the students' negative perception on their teachers. Moreover, arranging more interactive meetings such as get-togethers, small coffee chats and discussion forums between teachers and students would create more friendly atmosphere thereby reduce their nervousness and fear to approach them. The student will be more enthusiastic and eager to discuss their work with academics.

Conclusion

Higher education is one of the greatest assets to the individuals and the society. The changing and challenging nature of the student population entering to the higher education, make the educators find ways to enhance the student engagement. Strategies and approaches to improve the student engagement are numerous and divergent. Pedagogical approaches; developing more inclusive curriculums, problem-based learning, encouraging active learning, and course feedbacks, use of modern technology such as online discussion boards, LMS, general websites, general campus software and videos, social networking sites, and blogs and integrating social and cultural diversity; orientation programs, cultural shows, and community-based learning are the major strategies used to enhance the learner engagement. Although many common practices are being used to enhance the student engagement, those practices should be adapted in the best fitted way to address the institutional needs, courses that

are conducted and the students who are involved in higher education in order to obtain the best out of it.

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[1] Kyllonen, P. C. (2012). The Importance of Higher Education and the Role of Noncognitive Attributes in College Success La importancia de la educación superior y el rol de los atributos no cognitivos en el éxito en dichas instituciones. *Pensamiento Educativo, 49(2),* 84-100.

[2] Nasir, S., & Avunduk, Z. B. (2011). The Evolution and Transformation of Higher Education. A Content Analysis of Articles Published in Journal of Higher Education. *The International Higher Education Congress. New Trends and Issues (UYK-2011): The Conference Proceedings (Vol.1)* (pp. 395-403). Istanbul: Turkish Council of Higher Education.

[3] Krause, K. (2007). *New perspectives on engaging first year students in learning*. Brisbane: Griffith Institute for Higher Education.

[4] Zepke, N., & Leach, L. (2010). *Improving student engagement: Ten proposals for action. Active Learning in Higher Education, 11(3)*, 167-177.

[5] Smith, K. A., Sheppard, S. D., Johnson, D. W., & Johnson, R. T. (2005). *Pedagogies of engagement: Classroom-based practices. Journal of engineering education, 94(1)*, 87-101.

[6] Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O., & Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: A systematic evidence map. *International Journal of Educational Technology in Higher Education, 17(1)*, 2.

Chapter 05

Effective Teaching in Higher Education: Approaches for Improving Students' Active Engagement in Learning

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Higher education systems are gradually facing various challenges due to fast-changing society, globalization, and technical development. Therefore, the government has introduced many policies, principles, and qualification frameworks to face these challenges and improve the quality of higher education. However, improving the quality of higher education externally is not enough. The actual quality improvement of a higher education institute depends on the teaching-learning process of those institutes: i.e. active participation of teachers and students during a whole course provision[1,2].

Teaching and Learning in Higher Education

Teaching is an interpersonal influence, designed to alter the behavior or thinking of an individual. It can happen in different settings and in many different ways. Therefore, as teachers, it is better to always have a deep understanding of how students learn in order to be able to effectively apply and adapt various teaching strategies to meet their students' needs.

Teaching in higher education is different from teaching in schools. Teachers who teach in higher education are commonly focusing on developing the students' ways of thinking and enabling them to enter a field of study and practice. It is because when considering higher education, learning a specific subject is not at all about memorizing theory and concepts required for exams, it is also expected, preparing the student carefully for the world of work. Therefore, the university teachers always try to transmit all the concepts in the curriculum, help them in acquiring these concepts, and improve the students' knowledge further. A curriculum is often created by a set of experts in the relevant field with precise standards. These standards can change frequently, depending on the demand in the current job market.

Still, some university students are aspiring to the traditional teaching practices from their teacher: i.e. their teacher to become a supplier of information rather than being a facilitator. Thereby, the university students

hope that their teacher should direct them to learn through memorization, practice, and recitation. But, the modern teacher always should be a facilitator: a person who assists their students to learn by self-studying. Then this approach will help students to develop their critical and creative thinking, analytical, problem-solving, and decision-making skills[3].

What is Meant by Learning?

"Learning is the process of gaining knowledge and expertise." *From The Adult Learner by Malcolm Knowles*

Learning is acquiring knowledge or skills by studying, experience or being taught. But, it is not about only gaining knowledge or skills but also improving the attitudes and behavior of a person.

According to William Glasser's study, an individual learns only 10% from reading, 20% from hearing, 30% from seeing, 50% from both seeing and hearing, 70% from discussing with others, 80% from own experiences, and 95% from teaching. There are learning theories, which explain how persons acquire, retain, and recall knowledge. These theories include behaviorism, cognitivism, and constructivism.

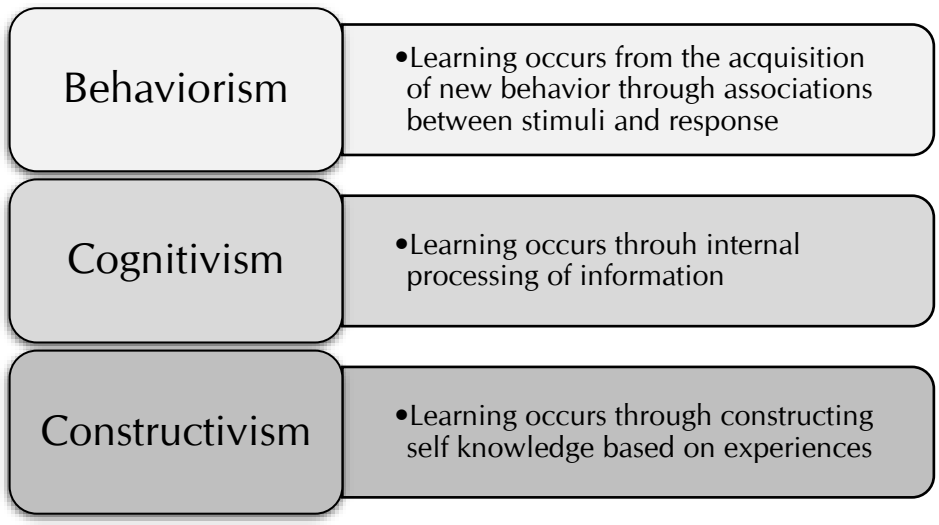

Figure 4 Learning Theories (By James Kelly, 2012)

Student Engagement in Higher Education

The level of attention, interest, optimism, and passion that a student shows when he or she is learning or being taught are called as student engagement[4]. Student engagement also affects with the motivation level of studying and also the progress of their education. If the student is not motivated enough to learn, they do not learn. Therefore, they do not show any progress in their education. In the 1980s, six main assumptions were

identified regarding adult learning by Malcom Knowles. They are: 1. Adults are internally motivated and self-directed. 2. Adults relate their life experiences and knowledge to learning experiences. 3. Adults are goal-oriented. 4. Adults are relevancy oriented. 5. Adults are practical oriented. 6. Adults have to be respected[5]. Thereafter these learning principles are expanded further.

In formal education, most of the learning activities occur inside a classroom. It is a built-in environment where students and teachers acquire contact to share information in their quest for knowledge[6]. this is the only opportunity to interact with students and deliver lecture materials effectively. Most of the students can share their ideas with others and learn more if they are actively participating in lectures. Effective teaching and learning occur when both teacher and student actively engage in learning activities. But, at present, we can see that students are not actively participating in lectures though how effectively teachers teach. According to Fredericks et al. (2004)[4], student engagement is categorized into three subparts:

- ***Behavioral engagement:*** students' participation in academic, social, and extracurricular activities in their institute
- ***Emotional engagement:*** students' emotional reactions within the classroom and within the institute (a sense of belonging or connectedness to the institute)
- ***Cognitive engagement:*** students' investment in their learning (motivation and self-regulation)

As many studies say, there are some factors that influence students to participate in lectures. They are:

- ***Teacher Factors:*** teacher's interaction styles (cheerfulness and shared attention, support, responsiveness, directness, verbal compliment), behavioral, and academic expectations.
- ***Classroom Factors:*** physical settings like classroom arrangements, noise levels, lighting, etc. and consistent and structured approaches to providing student support and disciplinary actions.
- ***Student Factors:*** students' physical, emotional, cognitive, and behavioral state, including health issues and disability, peer relationships.
- ***Family and Community Factors:*** students' residential circumstances, family support for involvement in education and relationships with their family.
- ***Curriculum and Resources Factors:*** availability and type of learning resources including technology, dimensions of the learning tasks (level of difficulty, interest, meaningfulness to the learner), task design, learning goals and objectives, and assessment approaches.

The lack of above-mentioned factors is the reason for the non-participation of students in learning. Another reason is inadequate self-motivation. Motivation is the driving force of any human activity and is considered a prerequisite for learning and its impact on learning is undeniable.

Effective Teaching

Effectiveness in teaching is not about being perfect or giving an amazing performance but bringing out the best in students. Therefore, it is the duty of teachers to motivate students to enhance active engagement in learning. Otherwise, no matter how much a teacher tries to teach them without their intervention, there is no worth. "When the student is ready, the master appears" is a Buddhist proverb. It applies well to all areas of education. Regardless of the teacher's efforts, learning begins only after the student is ready. Therefore, many approaches can be taken to enhance the active engagement of students in higher education.

There are many studies and theories regarding effective teaching and learning because it became a considerable topic around the world. As mentioned earlier, the motivation of the students is more important. Therefore, as a motivation theory, Maslow's Hierarchy is widely referred to in educational circles. As this theory says, individual needs to satisfy a set of needs to perform at their full potential.

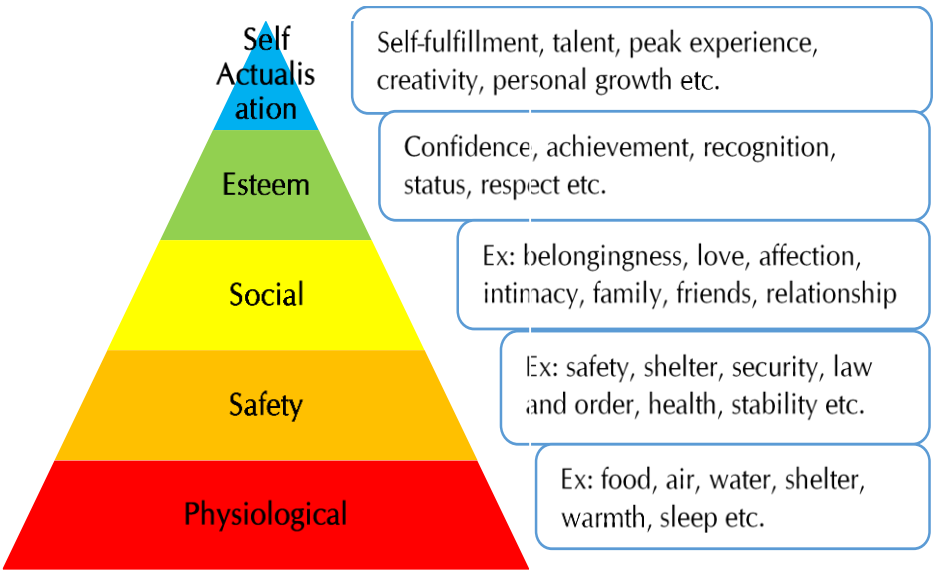

Figure 5 Maslow Hierarchy of Needs (Introduced in 1950's)

However, this theory (described in figure 2) can be considered as a philosophy more than scientific evidence. However, Maslow's hierarchy of

needs can be used as a reminder and a framework for teachers unless their students met their basic needs and perform at their full potential. The basis of this theory is that, this set of unsatisfied needs motivates students and that certain lower-level needs have to be satisfied before higher-level needs are addressed. Starting from the bottom, step by step it has to be satisfied. As teachers, they can facilitate some friendly environment around them to fulfill their basic needs. Also, they can create a trustworthy, safe, and active environment by giving students a chance to blend with peers and do studies. According to the fourth step, by letting students feel a sense of achievement and believe that peers see them favorably. It is a good pillar to self-motivate a student. After fulfilling the above facilities to a student, ultimately the student is reaching his/ her full potential and start utilizing his/ her strengths. There are many approaches that can be initiated to enhance the active engagement of a student.

Learning Resources

Introducing the latest technology into higher education is one of the best stimuli for students' interaction in learning because they are more familiar with new technology. The availability of good internet access is all that they need. They normally tend to use the internet every time to search for information and share it among their peers via social media.

Several studies mention that giving printed materials or allowing the lecture notes to download from the web, showing small video clips and images during the lecture, practically doing experiments explained in theory by giving more chances to do them on their own can be enhanced the students' active engagement. Encouraging students to use simulation software available for some practical subjects also increases student engagement since students have the chance to practice more, try to find the best solution through simulation software, and overcome obstacles or errors before performing actual implementation. Availability of the state of art lab facilities, a well-trained academic and non-academic supporting staff to help their lab works can also encourage students' engagement in their studies.

Teacher and Teaching Methods

Many studies say that the traits and skills of the teacher are affecting factors for the active participation of students in the classroom. If the teacher is always understanding, approachable, helpful, friendly through positive nonverbal behavior, giving smiles and nodding for admitting the answers that are given by students, affective and open-minded, it gives a motivational effect on the active participation of students inside the classroom. It is quoted that motivation is a product of effective teaching, not a prerequisite[7]. Therefore, effective teachers always create a learning environment where students experience the need for learning. Being attentive to students'

opinions, making them feel comfortable, confident to speak out, and do not put students on the spot in front of their contemporaries are highly appreciated by the students hence it is arising their need to learn.

Apart from the good qualities shown by the teacher, the skills of them also encourage the active students' participation in the classroom. The way they teach like using effective teaching aids and teaching techniques will be always encouraging the students to be more active and not feel bored. Many studies say that trying to use new teaching methods, such as student-centered active methods, problem-based, and project-based approaches are better in students' active engagement. Also having a pre-organizing lesson plan before coming to the class is a good practice to keep students active in the classroom. Otherwise, they may get bored if the sessions are irrelevant to the course that they are studied. Some studies say that including interactive discussion sessions and group activities during sessions encourage most of the students to actively participate in their studies. Also, trying to make the learning environment bit competitive with interactive debates or group works, evaluating their performance, and motivate them to win the event while they are performing, are considered as good approaches for students' active engagement in studies.

Encouraging students to do small projects or research is also good assistance to enhance their active engagement in learning. It also encourages them to have wide subject knowledge. But, it is not applicable at all because defining projects or research is not always practical for some modules. Directing students towards experimental learning is another successful approach to increase their active engagement in learning. From that, students have to describe and analyze practices and experiences from their own.

Assessments

According to a study undertaken by Bloxham and West (2007), it has been reported that students appraise the teachers who provide verbal clarification about assignment requirements in a manner, which they could understand[8]. Then most of the students actively engage in doing assignments well as to satisfy the assignments' requirements. Discussing assignments also help the student to ensure the way of doing them correctly. Some studies say that formative assessments (Any task or activity which creates feedback (or feedforward) for students about their learning) can be better than summative assessments (Any assessment which gives a mark or a grade as the result on student performance as a judgment) because it can enhance student learning interest and can be used to motivate students to undertake assessment for learning.

Feedback/ Performance Evaluation

Always try to give constructive feedback on students' academic performance which ensuring the students' learning also encourage the

students' participation in learning. Studies say that students also appreciate the timely detailed feedback on assignments because it acts as a guide to redirect students' thinking.

Curriculum

Developing the curriculum to meet the outcomes-based approach is also showing a shift towards the learning-based model focusing on students' active engagement in their studies. Learning outcomes are defined as the student's final achievements as a result of their engagement in a particular set of teaching and learning experiences. According to Bloom (1913-1993), learning outcomes at the student level have been categorized into three domains, which are cognitive (knowledge), affective (attitudes), and psychomotor (skills). Cognitive outcomes usually consult with the content knowledge that students can understand, explain, analyze, and apply. Skills outcomes check with the potential to try and do things like problem-solving, communicating effectively, or performing certain technical procedures in a task. Affective outcomes are related to attitudes that typically involve changes in beliefs or the development of certain values like ethical behavior, empathy, or respect for others. Student development is often taken as a form of employability and enhanced career mobility and lifestyle, the chance for further studies, or just a more fulfilled and happier life.

Classroom Environment

A classroom equipped with proper lights, fan or air conditioning, and other basic facilities like new technological resources, comfortable seats make students feel comfortable and hence encourage them to be active in their studies. Another thing is the class size. In classroom discussion sessions, students have more preference for participating in small groups rather than in a bigger group. Though it is not applicable in classroom lectures sometimes, we can consider it when doing laboratory practical sessions and allowing all students to use the facilities individually with the help of the supporting staff.

Classmates may also be an affecting factor in some student's active participation. According to a study done by Fassinger[9], two types of peers have been identified; first is the peers with interaction norms i.e. people who pressure others not to speak, keep comments brief and discourage controversial opinions. Second is the peers with emotional climate i.e. people who are supportive, cooperative, and friendliness. However, the teacher's duty often attempts to create a conducive learning environment, which can stimulate all the students to actively participate in the classroom.

An effective teacher needs to follow such a list of approaches to enhance the students' active engagement in their learning, even if it is a challenging task to consider all of them in the higher education system. However, the teacher must accept that the current generation of students is

born into a world of digital technology, which is called digital natives. Therefore, an effective teacher must be built on vision and commitment, learning on imagination, taking risks, filled with intentions, and inventions. Without these aspects, "teaching is mechanical and sterile, and learning is the stuff of pigeons pecking for food or mice running a maze"[10].

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1 Bonwell, C. C., & Eison, L. A. (1991). *Active Learning: Creating Excitement in the Classroom. 1991 ASHE-ERIC Higher Education Reports.* Washington, DC: The George Washington University.

2 Major, C. H., & Palmer, B. (2001). Assessing the effectiveness of problem-based learning in higher education: Lessons from the literature. *Academic exchange quarterly*, *5*(1), 4-9.

3 Sunal et al (1994) Traditional Versus Modern Methods of Effective Teaching Education. *Retrieved from:* http://www.ukessays.com/essays/education/traditional-versus-modern-methods-of-effective teaching.

4 Fredericks, J. A., Blumenfeld, P. C. & Paris, A. H. (2004). School engagement: potential of the concept, state of the evidence. *Review of Educational Research, 74 (1),* 59-109.

5 Knowles, M. S. (1980). The modern practice of adult education: From pedagogy to andragogy. New York. *NY: Cambridge*.

6 Wang, K. H., Wang, T. H., Wang, W. L., & Huang, S. C. (2006). Learning styles and formative assessment strategy: enhancing student achievement in Web-based learning. *Journal of Computer Assisted Learning*, *22*(3), 207-217.

7 Biggs, J. (2003). *Learning to teach in higher education*. Maidenhead, ENG: Society for Research into Higher Education.

8 Bloxham, S., & West, A. (2007). Learning to write in higher education: Students' perceptions of an intervention in developing understanding of assessment criteria. *Teaching in Higher Education 12*(1), 77-89.

9 Fassinger, P. A. (1996). Professors' and students' perception of why students participate in class. *Teaching Sociology, 24(1)*, 25-33.

10 Su, F. & Wood, M. (2012), What makes a good university lecturer? Students' perceptions of teaching excellence. *Journal of Applied Research in Higher Education, 4(2)*. 142 – 155

Section 02

Learner Engagement and Experience in Student-Centered Teaching

CHAPTER 6

Student–Centered Approach for Active Learner Engagement in Higher Education

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Introduction

Education is an essential and key aspect of every nook and corner in the world. The term education is derived from the Latin word "e-ducerc" which means "to lead out". It is hard to define the term education as it is a concept with broad connotations. Both Western and Eastern philosophers and educationists define education in different ways. One of the prominent Western philosophers, Johann Amos Comenius (1592-1670)[1] has conveyed that education is a development of the whole man. According to the Wikipedia, education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Although it is widely believed that education is only obtaining knowledge on a specific discipline, is an integration of both intellectual and personality development, skills, values, beliefs, habits, etc.

Education often takes place under the supervision and guidance of instructors or teachers whilst learners themselves can also educate. Furthermore, education is a lifelong process which can take place under the main educational modes and settings in formal, informal, and non-formal.

Formal education that has been utilized in different stages starting from preschool to tertiary education is the most common mode of teaching and learning. The process of formal education plays a vital role in the education and it differs from country to country. In this context, manifold educational approaches such as teacher-centered, student-centered, society–centered and development–centered are implemented in order to teach learners. This document focuses on the student-centered approach as it is gaining popularity in modern society.

Student-Centered Education Approach

The student-centered education approach emerged as a complement to the teacher-centered education approach due to the following reasons. The most conventional or traditional education system was based on

teacher-centered education where the teacher was the dominant role for planning the learning process, implementing, organizing, decision making, etc. This conventional education system was aimed only to enrich students with the knowledge and the teacher was expected to transfer his/her knowledge to the students. In this setting, lectures are the main knowledge delivery method and students are not giving much attention or priority to actively participate in the teaching-learning process. Therefore, the students are passive and the classroom environment is merely silent. In that case, the silent class is admired as the effective and best class where the students are not active. As a result, students are not given the opportunity to express their views and opinions.

As the freedom of students is not prioritized, they cannot explore and observe their talents, skills, and capacity. Moreover, innovative teaching techniques and methods, technology and teaching aids are not well utilized under a teacher-centered education system. Consequently, students are not motivated and the interests of students are ignored in this process. Therefore, the teacher-centered educational approach was much subjected for criticism by the philosophers, educationists, sociologists, and psychologists.

Due to the criticisms and drawbacks of teacher-centered education, a novel approach, students centered education was brought to the educational platform that is highly expected students to engage and to be active and energetic participants of the learning and teaching process. This concept was pressurized with the ideas of psychologists like Piaget, Maslow, Sigmund Freud, philosophers such as Rosseau, Pestalozzi, Froebel John Dewey, Montessori, and the ideas of sociologists like Margaret Mead. Student-centered learning is also called as learner-centered education which is shifted the method of instructions given to students by the teacher. The sole aim of this approach is to enhance learner autonomy and independence by allowing the students to take responsibility for their education while improving own skills and capability.

Pestalozzi[2] pointed out that teaching methods should be used according to the interest and abilities of the students. In accordance with the views of John Dewey, if students are motivated for learning, an interest must be created in them about the activities in which they are to engage. Furthermore, Maria Montessori[2] has conveyed that freedom and environment needed by the students for auto-learning should be provided for the students.

The students' interest and freedom in order to motivate them for their studies are mostly significant. Student-centered instructions focus on the skills and practices that enable them to be life- long learners and independent on their education. Moreover, abilities, needs, and individual differences are taken into consideration in this approach. Innovative and effective learning–teaching methods are developed to draw the attention of

students and variety in the learning environment is to awake interest and to arise the curiosity for learning.

Student-Centered Learning in Higher Education

Higher Education is exactly designed for the adult learners who are believed to be advance in self-learning, critical thinking and decision making and being responsible of themselves. In a setting like this, a student-centered approach extends a great contribution in order to enhance the active learner engagement in higher education.

Maryellen Weimer[3,4], in her book, learner-centered teaching marked the distinction of the practices in between teacher-centered and student-centered college teaching with reference to the balance of power in the classroom, the function of the course content, the role of the teacher in opposition to the role of the student, the responsibility of learning and the purposes and processes of evaluation. The main purpose of Maryellen Weimer's book was to manifest how the principles that were reviewed on becoming a Critically Reflective Teacher (1995) in Stephen Brookfield character to be applied in the setting of the actual classroom. Further, she observes that this negative aspect of classroom nature is identified by the college and university instructors and they strive to change this situation and create a student-centered environment in the classroom while prioritizing students as the vital focus in the higher education. Weimer recognizes the five key domains such as the power of the classroom, the function of content, the role of the teacher, the responsibility of learning and the purpose and process of evaluation. She has outlined and introduced new alternative approaches in order to generate a student-centered learning environment. Currently, attention has been drawn for employing a student-centered approach and the consideration is taken into the account to create activities that are fitted for student-centered approach. The concept of shift from teacher-centered to student-centered education provides the expected success of students which leads the teachers to sense their job satisfaction. In this regard, affective and cognitive domains are highly beneficial for determining the classroom effectiveness and active learner engagement.

The Balance of Power

As the conventional or traditional method of education in teacher-centered approach, no any argument that teacher possesses the entire sole power in deciding all relevant factors in respect of the content, the schedule, the conditions for learning, the attendance policies, and the evaluation process. Therefore, it is indeed, the teacher is in charge and beyond her, no any powerful role in the classroom. Weimer identifies the modern students in universities and colleges are anxious and tentative apart from being empowered, confident and self–motivated. In order to interrupt this nature of the classroom, she proposes the instructors and lecturers to share the

power with the students for taking decisions on their interest, capacity and potentiality. On the contrary, even though the students are given the opportunity to make decisions, the teacher should always be the behind power of the students or play a subordinate role as an advisor, a monitor, an observer, a facilitator, and a mentor.

Empowering students to make decisions in the classroom should be attentively implied because perhaps students become anxious in such conditions to relinquish their power on instructor or lecturer and to let him to make decisions. This is a challenge not only for novice instructors or lecturers but also for senior academics too.

The Function of Content

The target of covering the content or syllabus has become vital and imperative in higher education. The first and foremost intention of academics and students is to complete the syllabus and, in any case, if it is unable to achieve, both parties are to be displeasure and dissatisfied. Consequently, students tend to memorize rather than being conceptualization when a complicated and broad amount of content is introduced in higher education. The current education system is obviously exam-oriented and as a result, students and academics frequently strive with the effort of completing the content. In such conditions, students wish to depend on the teachers as a teaching resource and because of the incredible attitude that teachers have on the performance of students, teachers make an effort on pouring the knowledge based on the content. In terms of this, the teaching environment naturally becomes as a teacher-centered classroom. On the other hand, a classroom where the student possessing the ability to reproduce the information given and required by the teacher is accepted as the best in the classroom. Weimer suggests to college instructors to use course content as a supportive method for students. Moreover, she expected to improve the skills of study, time management, ability for oral and written presentation, and computational skills. Weimer highlights that students should be instructed and guided by the instructors to develop the skills such as critical thinking and problem solving via course concepts.

Furthermore, when a student-centered atmosphere is designed in a classroom student will build the interaction with the subject matter and they will be matured and self-regulating learners with futuristic learning skills. As a result of this setting, the students of the classroom became energetic and enthusiastic that leads the instructor or lecturer to have a high degree of job satisfaction.

The Role of the Teacher

Weimer emphasizes the change in the role of the teacher and the student. The teacher has to shift her role from “sage on the stage” to the “guide on the side” the teacher should not make effort in always filling the

students with knowledge but they must be guided to enhance their intellectual development. Weimer believes that students learn by doing that they should be given the chance to involve with the learning activities to improve intellectual and personal development.

For achieving other purposes of student-centered education, a new model of learning and teaching should be followed in which students should actively engage and involve. In this context, the student should not be further passive listeners to the teachers but teachers must be facilitators to students without being an expert in the particular discipline.

The Responsibility for Learning

Weimer points out that, in student-centered approach, the responsibility of learning is obviously transferred to the students. But it is indeed a fact to consider whether this shift is actively functioned by both teachers and the students. The students' main target of learning is to obtain a higher grade for their studies. But when it is not achieved, the responsibility and complaint will be placed with the teacher. As a result, teachers also tend to remain mostly with the teacher-centered system and as students also used to depend on the teacher, they also silently remain with the conventional approach. Students should be responsible to demonstrate academic integrity, to attend and participate in class and prepared and on time, and to complete the assigned work punctually. Students should be highly responsible and motivated for self-studies without being dependents on teachers always.

The purpose and Process of Education

Weimer remarks that the main concern of student-centered education is learning so that evaluation of student-centered education must not aim to train students to score good grades but it should promote learning as well. In this setting, students will be encouraged and guided to evaluate their own work and peers in a constructive manner. The students will be able to develop their theoretical and practical skills when they are given chance to practice it. To assess and evaluate, different types of tools must be used in the students centered learning and teaching. However, student-centered learning approaches are beneficial to develop students' motivation, satisfaction, and interest.

Effective Teaching Techniques in Higher Education Learner–Centered Classroom

Learner engagement, active learning, and other techniques that lead students to get involved and the main focus drawn towards students are defined as learner or students centered learning. Effective teaching methods and techniques should be deployed in order to make the students to be involved in the student-centered learning environment. Constructive and

productive teaching techniques promote students centered learning as well as these techniques can highly motivate the students. Teaching techniques that are planned to use in students centered classroom should be active and interactive to awake the students from the teacher-centered approach and teaching techniques must be able to arise the interest of students and then they will naturally tend to engage actively and interactively because learning is an active searching process which should not passively received by the learners.

In a learner-centered environment, teachers have to recognize the uniqueness of all learners and to utilize various teaching techniques in which the teachers are the facilitators and the guides in side are known as students centered teaching techniques. So that learner-centered teaching techniques are the best means of addressing the needs, interests, and motivation of the students in order to create active learner engagement. Variety of students–centered teaching techniques can be often identified as lecture/ open-ended questioning, class discussion led by teacher/ students, demonstration, graphic organizers, case studies, literature reviews, problems solving activities, Think–pair, share, student presentation/ peer teaching, jig–saw activities, debate, misconception check, one-minute papers, muddiest point, consultant letter, concept sharing rotation, picture prompt, pass the pointer, word/ concept of the day, 3,2,1,[5] etc.

Lecture/ Open–Ended Questions.

The lecture method is the most convenient and popular method of teaching any of the subjects in the higher education. The lecture method is controlled by the teacher and focuses on giving information in which the teacher plays the role of resource in the classroom. In between the lecture in 7 to 10 minutes, the pre-planned open-ended question can be given to the students. Here students can be asked to record their answers in their notes and then to share with the person who is sitting next to them and later to share with the whole class.

Class Discussion Led by Teacher/ Students.

Class discussion is effective for students to actively engage to share their opinions, views, information, and knowledge among others. When the students engage with group discussion, they are able to enhance their critical thinking, logical, and argumentative ability. Class discussions can be led by students or teacher. Students can be allowed to have discussion openly with the group members and at the end of the discussion, they can share their opinions, views, thoughts, knowledge, and information with other groups in the class. On the other hand, the teacher can conduct a discussion with open-ended type of questions which are given and let them engage with the teacher.

Demonstration

The demonstration is a visual method to examine information, ideas, and process. In this technique, the teacher plays an active role as a learner and a model directly telling students what they should do. When this technique is used in the class, the teacher performs the experiment in front of the whole class while explaining what she is doing and the teacher asks the questions from the students when the experiment is being explained to keep the interest and draw the attention of the students. They are also very keen and attentively listen and see what the teacher is doing because, at the end of the process, they have to explain what they see and understand from the task done by the teacher.

Graphic Organizers

Graphic organizer is a supportive tool for students in all ages to organize, clarify, and simplify complex information. This technique is a visual display which illustrates the relationship between facts, concepts and ideas. eg. flow chart, concept maps, storyboards, diagrams. Graphic organizers are effective and supportive for the lecture to get students more engaged and involved in teaching and learning.

Case Studies

Case study is a teaching technique that is used to teach using a single instance, a case, or a study which should be observed and explained to solve a problem. This teaching technique is a best method to get students' engagement activities in higher studies. The case study is able to widen the critical thinking capacity of students towards the situations and problems and then students can make appropriate solutions and decisions on the problems which are to be observed and explored. Real people and real problems that should be solved can be utilized in the most effective case studies.

Literature Review

Students can be assigned to read the research articles in professional/ academic journals to be familiar with the course content and current research. It will be highly beneficial for them to engage with the task of reading research review articles which can enhance their knowledge, interest, and motivation on a particular field of research. Students should be allocated to write one-page reviews with three paragraphs respectively summarizing the content, describing the strength and drawbacks of the study and possibly applying the information practically.

Problem – Solving Activities

Problem-solving teaching technique means teaching through solving the problem. Students can be provided with problematic contexts to work in small groups. They should work together and collaboratively to deliberate

possible solutions to the problem. Then in a class discussion, students should share their solutions with the other groups. The people-focused problem in their day to day real life. So it is indispensable for the students to develop their skills in order to solve their problems. According to Killen[6], through problem-solving techniques, students can engage and they can be motivated to enhance their deeper level of understanding when applying the solutions in real-life situations.

Think, Pair, Share

Think, pair, share is a collaborative teaching technique which is used to get involved the students to work together in order to find solutions, to express own opinions, views and suggestions on any assigned task. This technique guides students to think individually on any topic given to them. Then they have to discuss their ideas with the person sitting next. Finally, the pairs can be widened to share with the whole class.

Students Presentation/ Peer Teaching

Peer teaching is framed for students to teach for students. When this technique is employed in the classroom, the professional roles are given to the students for peer teaching. Then they will present the content to the class. This technique is able to get students engagement effectively and communication skill is also developed.

Jig–Saw Activities

Students can be divided to work as groups to be an expert on a certain topic. Each group must focus on only one topic. Then the groups will be remixed. So that there is an expert for each topic. Students can design facts, sheets, notes, brochures, or any other document to share with the members of the new group.

Debate

Debate is one of the most important teaching techniques as students perform a collaborative effort to win the debate with proper and accurate information. The formal or informal debate can be held on current topics. When this technique is deployed in the class, students will be gradually trained to work with proper time management. Students will be given an exact limited time to present their facts and information. In a debate, the argumentative ability is highly expected but with the proper time management. Moreover, as a collaborative teamwork, students must have active engagement and involvement to make a successful debate. Students would be able to enhance their communication skills and presentation skills to be self-confident speakers.

Misconception Check

At the beginning of the class, the misconception check technique can be utilized when a new lesson is going to be started. Before teaching, at the first stage of the lesson, students can be given a particular question based on the lesson or they may be asked to write what they have already known about the topic to brainstorm. Then students are able to present what they have written on the particular lesson using the board in the class.

One–Minute Papers

One–minute paper teaching technique is most important to be used at the end of the class. Students write for one minute on a particular question which is having relevance and connection with the prior knowledge and they will relate what they have already learned to what is to be learned.

Muddiest Point

Muddiest–point is a teaching technique in which students are able to identify confusing and challenging concepts in a lesson. Students are able to recognize and point out what they do not understand and the instructor also can get an overview on students' understanding and which concepts should be reinforced in the class. This technique is most suitable to use at the end of the class.

Consultant Letter

In this teaching technique, students should work as the "consultants" to solve real-world problems of the people who are in the industries. Students should be produced a "request" letter tracing the problem in which they should play the role as "consultant". Then the students will research the problem, find the appropriate solutions or detailed plan and share their solutions through a written letter or a presentation.

Concept Sharing Rotations

Multiple boards or plain posters which are written a topic or a question should be fixed in the classroom. Then, students must be rotated around each poster in the class to share their knowledge in each topic or a question in the posters. This task can be accomplished in groups. Finally, a class discussion can be held with the participation of all the students.

Picture Prompt

A picture prompt is a teaching technique that is done using an image or a diagram. Teacher can display an image or a diagram without any explanation. Then students have to write about the image or diagram using the concepts and terms what they have already learned in the lecture. The correct answer should not be given until they complete the task properly. Once they discuss about their picture in groups, answers can be reviewed

as a whole class. This technique is also appropriate for a small group activity to get the active engagement of the students in learning.

Pass the Pointer

A complex image or diagram is displayed on the board. Then the laser pointer can be passed to different students around the class. The students have to identify, describe and explain some aspects of the image or diagram.

Word/ Concept of the Day

A word or a concept of the day should be introduced at the beginning of the class. Students have to write everything that they know about the word or the concepts. Then at the end of the class, a brief discussion can be done in the class regarding the concepts they learned and to get an insight into the misconception that they have.

3,2,1 Concept

This teaching technique is utilized to have a reflection on the lecture, discussion, e-module, or any other texts. Three questions should be asked from students.

1. What are 3 things they learned?
2. What are 2 things they focused interesting?
3. What is the question still you have?

Students should be allowed to discuss their answers to these questions as small groups. At the end, small group discussions can be developed as class discussions.

The teaching techniques mentioned above can be utilized within the lecture and can be varied gradually in order to divert students for active learner engagement in higher education.

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[1] National Institute of Education. (2018). *Principles of Education: What is Education.* Maharagama: National Institute of Education

[2] National Institute of Education. (2018). *Principles of Education: Various Educational Approaches*. Maharagama: National Institute of Education

[3] Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass

[4] Wright, G. B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education*, *23*(1), 92-97.

[5] Retallick, M. (2020, 05 02). *Higher Education Learner Centered classroom practices*. Retrieved from Learner-Centered Teaching Techniques: https://pbea.agron.iastate.edu/files/Teaching%20Techniques_1.pdf

[6] Killen, R. (2009). Using direct instruction as a teaching strategy. In R. Killen, *Effective teaching strategies: Lessons from research and practice* (pp. 117-147). South Melbourne: Cengage Learning

CHAPTER 7

Role of the Teacher in Effective Student-Centered Learning

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Introduction

The two main approaches use for teaching today are teacher-centered learning and student-centered learning[1]. In the teacher-centered model, teachers have the main authority. Students inactively collect information through lectures and direct instructions from the teacher. The two separate entities of this model are teaching and assessment[2]. In student-centered learning, teachers and students play a similarly active role in the learning process compared to teacher-centered learning. The student-centered approach and teacher-centered approach can be characterized as a balance of power in the classroom. Delivering the course content is the role of the teacher versus learning the course content is the role of the student[3, 4].

Learners decide not only what need to be studied, but also how and why it needs to be studied in the student-centered learning approach[5,6]. The learner has the entire responsibility in the learning environment, in comparison to the prominence on instructor control conventional environment[7]. In addition, learners find the learning process meaningful because the topics are applicable to their interests. In this approach, the students engage in understanding and connecting the knowledge to their practical lives[8].

The role of the teacher in student-centered classrooms encourages learners the innovative learning and learning from the individuals. The instructor focuses on day to day examples that inspire them active participation[9]. Teachers are guides, facilitators, and designers in the Learner-centered paradigm. Students are the main performer and teachers are no longer the main performer working harder than everyone else to make it all happen.

Student-Centered Classroom

The learner requires communication and mixing with each other in the student-centered classroom. Learners are encouraged to create their own

activities and select their own study materials in this approach. Learners interact through team learning and by teaching each other in this method. Furthermore, the learners accumulate what they have learned previously in their learning process[10].

Students are the active participants in the student-centered approach. Some of the responsibilities and characteristics of the student-centered method are given below.

- Dynamic participants in their learning process.
- Build conclusions on what to learn and how to learn.
- Accumulate new knowledge and skills for their existing skills.
- Use self-assessment methods for the expectations.
- Observe their own learning to develop their own methods.
- Practice teamwork with other learners.

In the student-centered approach, the teachers play a passive role. Teachers are the passive participants[11]. Teacher responsibilities of the learner-centered approach characteristics are given below.

- Recognize and accommodate different learning methods.
- Offer the pathway without being too directive for them.
- Admire the learner's point of view.
- Encourage and assist learners in the decision-making process.
- Facilitate learners to work through difficult problems by asking open-ended questions to help them arrive at acceptable conclusions.

Student-Centered Learning

No matter how diverse their learning needs, every learner benefits from effective instruction. Learners gain self-confidence and feel confident about themselves when they meet success[12]. Learners can be successful in their abilities because they demonstrate higher achievements[13]. Learners benefit from reading and using genuine materials rather than textbooks. Time spent learning how to learn and how to understand balances the time that was spent entirely on content and memorization. In assessment, a student-centered classroom relies on portfolios that include both instructor-developed and self-assessments[14].

Teachers can support the students to discover how they learn the best and they can apply different strategies suitable for them. Learners take the entire responsibility for organizing and arranging the content, generating examples, answering questions, and solving problems and the teachers direct less in student-centered learning approach[15,16]. The teacher does design work, construct real-life problems that encourage learner contribution and participation. Teachers demonstrate how to approach learning tasks, and

they encourage learners to learn from and with each other. Maintaining a climax of learning is the responsibility of the teacher[17].

Teaching-Learning Methods

The role of the teacher is essential for effective student-centered learning. This section emphasizes effective teaching-learning methods. Student learning is greatly affected by the teaching and learning methods used by the teachers. The subject matter to be taught and the learning environment of the student are determined by these methods. In order to be successful, a particular teaching method has to be taught in relation to the characteristics of the learner. Effective teaching method must take into account not only the subject contents but also how the students learn[18,19].

Teaching methods are chosen to accomplish specific objectives and useful for achieving the learning objectives of the students' needs. Teaching methods can be divided into two categories. They are called teacher-directed and student-directed. Direct instruction, worked examples, interactive lecture, flipped classroom are some of the methods used in teacher-directed methods[20]. In the flip classroom approach, course materials are introduced outside the class, in order to satisfy the needs of individual learners[21]. This is also known as inverting a classroom. Readings, pre-recorded video lectures, and assignments are included in the course material. Helping students on course material individually or in groups are conducted inside the class. The flipped classroom method is an instructional strategy based on student engagement giving the instructor a better opportunity to deal with mixed levels[22]. The flipped classroom method of teaching is suitable for turning a traditional classroom into an inquiry-based learning environment[23].

The flipped classroom method is built upon flipping Bloom's taxonomy. Lower levels of the taxonomy, such as remembering and understanding, are happening outside the classroom. In comparison, higher more challenging levels of taxonomy, such as creating and evaluating, are happening inside the classroom[24].

Bloom's Taxonomy

The classification of educational objectives used for developing higher-level thinking skills is called Bloom's Taxonomy. As a result of the process-oriented model, teachers can present ideas and concepts at many different levels to meet the requirements of various learners[25].

Six major categories are included in the framework designed by Bloom and his partners. Those categories are Knowledge, Comprehension, Application, Analysis, Evaluation, and Synthesis. The categories after Knowledge were presented as "skills and abilities," because the knowledge was the necessary condition for the availability of skills and abilities (Figure 1).

- Remembering the essentials, remembering the methods and processes, or remembering a certain pattern is called knowledge.
- Understanding or nervousness such that the individual knows what is being communicated and can make use of the material or idea being communicated without essentially relating it to other material is called Comprehension.
- Use of abstractions in a particular situation is called Application.
- Breaking down of communication into essential elements such that the relative hierarchy of ideas and the relations between the ideas expressed as explicit is called Analysis.
- Judgment of the value of material and methods for a given purpose is called Evaluation.
- Connecting all the elements and parts to form the whole is called Synthesis.

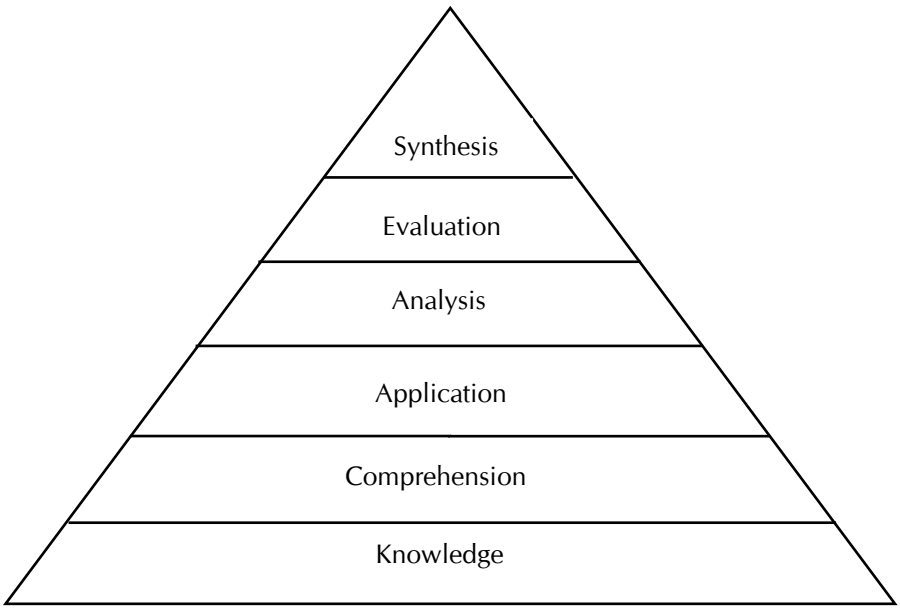

Figure 1. Bloom's Taxonomy

How to Create a Student-Centered Classroom?

Teachers have different implications in student-centered learning. Teachers can help students set goals for themselves and offer self-directed activities through which learners can build self-confidence and learning skills. In a student-centered classroom, teachers gain self-confidence in preparing the students for the new environment and the students become motivated to take challenges in their learning[26].

In the student-centered approach, the whole class moves to well-directed small groups. Instructors focus on the topics to be assigned to these groups. In this approach, the learners benefit from reading and

understanding the contents compared to memorizing the content. Assessment of student-centered learning relies on both student and teacher developed portfolios[27].

Teachers can encourage students to find their best learning methods and apply different strategies suitable for the individual learner. When the student is independently set his or her own goals, the instructor becomes a facilitator who directs students on how to achieve their goals by reviewing and laying out the plan. Students are responsible for learning, achieving, and setting up future goals in the student-centered environment[28].

The role of the teacher changes from the main actor's role to the supporting actor's role. Learners take responsibility for organizing the content, generating examples, and solving specific problems. Demonstration of how to approach the learning tasks and clarification of how to learn from each other can be explained by the teachers.

Teachers can make the following contributions in creating a student-centered classroom:

1. Create a protected environment
2. Communicate learning goals
3. Provide a structure for feedback
4. Emphasis on responsibility

Create a Protected Environment

The foundation of learning must be started from a secure, nurturing classroom with positive and open communication. Learning is meaningful when the classroom environment is one of the welcoming errors, developing and exercising new skills. Diversity of thoughts and judgment free thinking result in a mutually respectful classroom[29].

Communicate Learning Goals

It is important that the teacher communicates with the student directly. Students will set positive relationships with the teacher as a result of clear procedures. The solid teacher-student relationship is built on mutual respect[30].

Provide a Structure for Feedback

It is also important that the teacher establishes a structure for feedback with the students. Earlier teachers would communicate through grades, reports, phone calls during the year. Teachers provide continuous feedback to students every day with the student-centered learning approach. This productive feedback mechanism leads to higher student performance over time[31].

Feedback should be understandable and given in a timely manner[32]. It is very crucial that feedback should not be given in the conclusion but with regular discussions with the students. This dialogue ensures students have

sufficient time to implement the feedback comments given by the teacher. Students know what parts of their learning require revisions and what parts require corrections with a well-established feedback system[33].

Emphasis on Responsibility

Responsibility is a very important aspect of the classroom. How they derived the solution, showing the steps of the solution, and being genuine in the entire process are all good qualities of a responsible student. Emphasis on responsibility encourages students to think about why they are important in learning while teachers find the best learning methods. Responsibility is not a rule but a mutually agreed working principle between the teacher and the student to achieve his or her ultimate goals[34].

Creating a student-centered classroom does not mean de-emphasize high expectations. However, it does mean a positive safe learning environment affects students to reach their expectations in a novel unimagined way.[35].

Relationships, curriculum, instructions, and learner groupings are affected by changing the classroom. Relationships between the teacher and student become mutual; the curriculum is more tentative and multitasking; instruction is more learners' strengths, experiences, and active participation; groupings are more cooperation and shared responsibility[36].

Student-Centered Learning in Universities

The student-centered learning approach is very useful in universities. In the traditional teacher-centered approach, students listen to the lectures, take notes, memorize the contents of the courses, and pass the examinations. Researchers have found that over the years, in Science, Technology, Engineering, and Mathematics (STEM) fields students lag the necessary skills require for their profession[37]. The main reason is that teacher is playing an active role and the students playing a passive role by listening to the teacher. Students or learners should take responsibility for organizing the content and solving their specific problems. Eventually, this novel student-centered approach will guide them towards achieving their future goals.

The student-centered approach emphasizes the use of well-directed groups instead of the whole class. For example, in a laboratory session, students can be grouped according to student assigned groups or instructor assigned groups. Next, a series of topics covering the entire laboratory curriculum can be given to the students. These topics can be given with the targeted results but not how to achieve the results. As a result, students in the groups are expected to find the procedure for the given topic by referring to textbooks, discuss among their group members, search similar problems given on the web, etc. After that, the students should solve the problem, obtain results for the given problem, and present the findings to the entire

class. In this example, group communication among the team members as well as with the teacher is essential for the successful completion of the laboratory[38]. Each team members' responsibility and their feedback to the teacher are crucial for the successful completion of the laboratory. Finally, students are their educators and motivators to achieve their goals in student-centered learning[39].

Industrial Training Period

The student-centered learning approach can be used successfully in industrial training projects. As an example, the fourth-year joint major students are currently required to work in an industry for six months for their industrial training. As a result, students obtain the necessary knowledge and the hands-on experience that they are required to find employment in the future. Students are supposed to find a suitable topic for their company and engage in an industrial training project within the six-month period. Students are responsible to communicate with the external and internal supervisors to finalize the topic. In this industrial training period, students send the progress reports to their industrial training coordinators and the respective academic advisors (internal supervisors) every two weeks. A timely generated progress report is a feedback mechanism of the student's progress from the external supervisor to the internal academic advisors. Students meet their advisors every month within this period. Internal supervisors provide their feedback to students on how to improve skills in the workplace and how to complete the industrial training project.

As a result of industrial training, students improve both their communication and presentation skills in addition to the problem-solving skills in the real-life working environment. Learners become motivated, self-directed, and build self-confidence from this industrial training. Students become their own leaders in succeeding in the ultimate goals.

Undergraduate Projects

One of the best student-centered learning approaches is undergraduate research projects. Currently, university fourth-year joint major students need to complete a yearlong undergraduate project for their degree requirement. Students need to carry out a literature survey before finalizing a topic with the advisor. Therefore, students need to communicate with their academic advisors regularly to obtain a suitable topic for the project. Next, the students present their project proposals and get feedback from their advisors. Students present their progress after six months from the initial presentation. This presentation needs to address the feedback comments given by the lectures at the beginning. Students know exactly what parts of their project require revisions and what parts of the proposed solution contains inaccuracies by timely feedback.

At the end of the final year, students carry out two presentations, one for the industrial training requirement and the other for the undergraduate project requirement at the Annual Symposium on research and Industrial Training (ASRITE) conducted by the Department of Electronics, Faculty of Applied Science annually. These final year student research projects and industrial training programs are very good examples for implementing student-centered learning.

Mentoring

Mentors are needed to offer advice and guidance to students for their academic and personal matters. Each student is assigned with a faculty member in the mentor-mentee program. The faculty member is the one who provides support for a student during the difficult transition period. Teachers (Mentors) provide valuable information to students (Mentees) to accomplish their career goals in the student-centered learning process. Mentees play an active role and the Mentors provide the supportive, passive role[40].

Learning Management System

Universities are among the leading institutions that use the Learning Management System (LMS) in their curriculum. LMS is the main software platform used in all universities. A specific learning procedure can be planned and implemented using LMS, which is a software application or web-based technology[41]. Modular Object-Oriented Developmental Learning Environment[42] is the frequently used open-source software which enables the addition of modules[41]. LMS supports the student-centered learning model[43] where students have to construct knowledge actively.

Understanding the student and how to character the student according to the requirement are very essential components in student-centered learning. Researchers prove that well-structured LMS courses designed according to the student needs can help them stay on track, engage in the course material, communicate with each other and the teacher, and receive feedback from the teacher. LMS makes the content creation and assessment process easy for the teachers. LMS offers automated assignments, and the marking of the assignments can be done instantly as soon as the student takes the test.

Conclusion

Teacher-centered learning and student-centered learning are the two main approaches used for teaching today. The teacher plays an active role in the teacher-centered approach. In comparison, students play a major role in the student-centered approach. When the learners are enthusiastic about their learning process they find it beneficial for them.

In the student-centered learning method, the teacher's role is very important. In the flipped classroom method, the students are mainly involved

in knowledge acquisition and as a result, the teacher's interaction with the students will be custom-made for them.

The teachers need to change the existing teaching and learning methods in order to obtain the benefits of student-centered learning. Teachers can take an incremental approach in their teaching. In conclusion, the students will achieve their career goals as a result of these innovative approaches.

The student-centered approach consists of research and project work. It will increase student participation, increase the enthusiasm of the subject matter, emphasize learning not memorization, and promote group work compared to the teacher-centered approach.

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[1] Nurjannah, I. H. (2017). Teacher-Centered Learning and Student-Centered Learning Approaches in Nursing School: Which One is Better . *Belitung Nursing Journal, 3*(2), 65-72

[2] Pressley, M., & McCormick, C. (1995). *Cognition, teaching, and assessment*. New York: HarperCollins College Publishers.

[3] Barr, R. B., & Tagg, John. (1995). From teaching to learning—A new paradigm for undergraduate education. *Change: The magazine of higher learning, 27*(6), 12-26.

[4] Shavelson, R. J. (1992). *New roles for teachers and students. Effective and Responsible Teaching*. San Francisco, Jossey-Bass: The New Synthesis.

[5] Rogers, C. R. (1983). *As a teacher, can I be myself? In freedom to learn for the 80's*. Columbus: Charles E Merrill Publishing Company.

[6] Wright, G. B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education, 23*(1), 92-97.

[7] Cannon, R. (2000). *Guide to support the implementation of the Learning and Teaching Plan Year 2000*. Adelaide: ACUE, the University of Adelaide.

[8] McCombs, B. L., & Whisler, J. S. (1997). *The Learner-Centered Classroom and School: Strategies for Increasing Student Motivation and Achievement. The Jossey-Bass Education Series*. Jossey-Bass.

[9] Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco: John Wiley & Sons.

[10] Moffett, J., & Wagner, B . J. (1992). *Student centered language arts, K - 12*. Portsmouth, NH: Heinemann.

[11] Thamraksa, C. (2003). Student-centered learning: Demystifying the myth. *Studies in Language and Language Teaching, 12*, 59-70.

[12] Aaronsohn, E. (1996). *Going Against the Grain. Supporting the Student-Centered Teacher*: Thousand Oaks, CA: Corwin Press, Inc.

[13] Barell, J. (1995). Critical issue: Working toward student self-direction and personal efficacy as educational goals. *Naperville, IL: North Central Regional Educational Laboratory. Retrieved September, 12*, 2005.

[14] Cheng, L., Rogers, T., & Hu, H. (2004). ESL/EFL instructors' classroom assessment practices: Purposes, methods, and procedures. *Language Testing, 21*(3), 360-389.

[15] Brush, T., & Saye, J. (2000). Implementation and evaluation of a student-centered learning unit: A case study. *Educational technology research and development, 48*(3), 79-100.

[16] Grow, G. O. (1991). Teaching learners to be self-directed. *Adult education quarterly, 41*(3), 125-149.

[17] Keppell, M., Au, E., Ma, A., & Chan, C. (2006). Peer learning and learning-oriented assessment in technology-enhanced environments. *Assessment & Evaluation in Higher Education, 31*(4), 453-464.

[18] Borich, G. D. (1988). *Effective teaching methods*. New Delhi: Pearson Education India.

[19] Carpenter, J. M. (2006). Effective teaching methods for large classes. *Journal of Family & Consumer Sciences Education, 24*(2), 13-23.

[20] Moraros, J., Islam, A., Yu, S., Banow, R., & Schindelka, B. (2015). Flipping for success: evaluating the effectiveness of a novel teaching approach in a graduate level setting. *BMC medical education, 15*(1), 1-10

[21] Larcara, M. (2015). Benefits of the Flipped Classroom Model. In I. Management Association (Ed.), *Curriculum Design and Classroom Management: Concepts, Methodologies, Tools, and Applications* (pp. 93-105). Hershey, PA: IGI Global.

[22] Gilboy, M. B., Heinerichs, S., & Pazzaglia, G. (2015). Enhancing student engagement using the flipped classroom. *Journal of nutrition education and behavior, 47*(1), 109-114.

[23] Love, B., Hodge, A., Corritore, C., & Ernst, D. C. (2015). Inquiry-based learning and the flipped classroom model. *Primus, 25*(8), 745-762.

[24] Morton, D. A., & Colbert-Getz, J. M. (2017). Measuring the impact of the flipped anatomy classroom: The importance of categorizing an assessment by Bloom's taxonomy. *Anatomical sciences education, 10*(2), 170-175.

[25] Forehand, M. (2010). Bloom's taxonomy. *Emerging perspectives on learning, teaching, and technology, 41*(4), 47-56.

[26] Kohonen, V. (1992). Experiential Language Learning: Second Language Learníng as Cooperative Learner Educatio. In D. Nunan (ed.), *Collaboratíve Language Learníng and Teachíng.* Cambridge: Cambridge University Press. (pp. 14-39).

[27] Pressley, M., & McCormick, C. (1995). *Cognition, teaching, and assessment.* New York: HarperCollins College Publishers.

[28] Glasgow, N. A. (1997). *New curriculum for new times: A guide to student-centered, problem-based learning*: Corwin Press: Thousand Oaks, CA.

[29] Froyd, J., & Simpson, N. (2008, August). Student-centered learning addressing faculty questions about student centered learning. In *Course, Curriculum, Labor, and Improvement Conference, Washington DC* (Vol. 30, No. 11, pp. 1-11).

[30] Overby, K. (2011). Student-centered learning. *Essai, 9*(1), 109-112.

[31] Cook, J. S. (1998). How technology enhances the quality of student-centered learning. *Quality Progress, 31*(7), 59-63.

[32] Frey, N., & Fisher, D. (2011). *The formative assessment action plan: Practical steps to more successful teaching and learning*: Alexandria, VA: American Society for Curriculum and Development.

[33] Armbruster, P., Patel, M., Johnson, E., & Weiss, M. (2009). Active learning and student-centered pedagogy improve student attitudes and performance in introductory biology. *CBE—Life Sciences Education, 8*(3), 203-213.

[34] Diamond, J. B., Randolph, A., & Spillane, J. P. (2004). Teachers' expectations and sense of responsibility for student learning: The importance of race, class, and organizational habitus. *Anthropology & education quarterly, 35*(1), 75-98.

[35] Danielson, C. (2013). The framework for teaching evaluation instrument, 2013 instructionally focused edition. *Retrieved January, 17*, 2017.

[36] Thamraksa, C. (2003). Student-centered learning: Demystifying the myth. *Studies in Language and Language Teaching, 12*, 59-70.

[37] Lee, O., Hart, J. E., Cuevas, P., & Enders, C. (2004). Professional development in inquiry-based science for elementary teachers of diverse student groups. *Journal of research in science teaching, 41*(10), 1021-1043.

[38] Kurtz, S., Draper, J., & Silverman, J. (2017). *Teaching and learning communication skills in medicine*. Oxford, England: Radcliffe Publishing.

[39] Froyd, J., & Simpson, N. (2008, August). Student-centered learning addressing faculty questions about student centered learning. In *Course, Curriculum, Labor, and Improvement Conference, Washington DC* (Vol. 30, No. 11, pp. 1-11).

[40] Zhu, E. (1998). Learning and mentoring: Electronic discussion in a distance learning course. In C. Bonk and K. King, eds, *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse*, pp. 233–259. Lawrence Erlbaum Associates: New Jersey.

[41] Liyanage, M. P. P., Gunawardena, K. S. L., & Hirakawa, M. (2014). Using learning styles to enhance learning management systems. *International Journal on Advances in ICT for Emerging Regions, 7*(2), 1-10.

[42] Cavus, N., & Zabadi, T. (2014). A comparison of open source learning management systems. *Procedia-Social and Behavioral Sciences, 143*, 521-526.

[43] Santoso, H. B., Schrepp, M., Isal, R., Utomo, A. Y.,& Priyogi, B. (2016). Measuring user experience of the student-centered e-learning environment. *Journal of Educators Online, 13*(1), 58-79.

CHAPTER 8

Teaching-learning Strategies to Improve Learner Engagement in Higher Education

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What is Learner Engagement?

As teachers, we all should realize what learner engagement is. Then only the teachers will be able to implement strategies to enhance the learner engagement. If a learners' eyes are focused on the board, towards the teacher, or on the content of the book/ lecture notes, teachers may believe that learners are engaging well in the lesson. However, according to the definition of learner engagement, eye contact is only one of the particular methods of measuring student's engagement or attention. Learners' engagement is defined as learners' cognitive investment in, active participation with, and emotional commitment to learning a particular content[1]. Therefore, it can be observed that learner engagement includes three aspects namely, behavioral engagement, emotional engagement, and cognitive engagement.

Behavioral Engagement

It is referred to as learners' engagement in academic work, learners' participation in extracurricular activities, and proper behavior of learners. Those can be observed through credits earned, homework completion within a given time frame, attendance, listening attentively, extracurricular participation, behavior, suspensions, effort, and persistence.

Emotional Engagement

It is referred to as the extent and nature of positive and negative reactions to teachers, classmates, academics, and institutions. It can be observed through learners' feelings of interest, happiness, sadness, anxiety, boredom, and anger during achievement-related activities.

Cognitive Engagement

Cognitive engagement is focused on the internal investment in the learning process which includes the inner psychological qualities of the

learners or their non-visible behaviors that promote effort in learning, understanding, and mastering the knowledge or skills that are promoted in their academic work. The learners set academic goals and try to master their work using effective study strategies and motivate to learn. Cognitively engaged learners feel that they can and need to succeed in their works.

However, all three dimensions of learner engagement are interconnected. As an example, learners believe that their academic work is relevant to their lives, will impact their participation in the lectures and their academic performance. On the other hand, as teachers, we may be familiar with the learners who always work hard but seems to struggle with learning. These kinds of learners may be behaviorally engaged but not cognitively engaged. Therefore, as teachers, we need to focus our efforts on enhancing all three areas by helping learners to integrate their thoughts, feelings, behaviors, thinking patterns, etc. to be more successful in academic work as well as their lives.

Teaching-learning Strategies to Improve Learner Engagement

Explain the Relevance of the Course

The teacher should explain the relevance of the course especially at the first day of teaching a particular course and thereafter at appropriate milestones. Learners need their work to be intellectually engaging and relevant to their real-life scenarios. Therefore, they have a curiosity to know how the skills they learn will improve their professional lives. If learners feel that the course content is not relevant to their interests or to their future, no value in what they are being taught. On the other hand, if learners believe that the course content will have a measurable impact, they will be far more likely to be engaged in the lesson.

Promoting Active Learning

Active learning creates a teaching and learning environment primed for student involvement. Student involvement through active learning can be achieved by both learner-centered learning strategies and teacher-centered learning strategies. Later it is described how learner-centered learning strategies and teacher-centered learning strategies help to active learning. In teacher-centered learning, the teacher plays a major role in the lecture. On the other hand, learner-centered learning provides the main focus to the learner and the teacher acts as a facilitator.

Teacher- centered Learning Strategies to Promote Active Learning

Lecturing with Creative Contents

Lecturing can be considered as the most traditional way of teaching. Most of the learners believe that lecturing as a passive learning method and hence their role in the lecture is passive. Then the learners try to sit back on

a chair and feel relaxed with or without paying attention to the lecture. Sometimes, it creates boredom and it acts as a catalyst for causing learners to be disengaged. The teacher should identify interactive teaching strategies to maintain the attention necessary for active learning during the lecture.

It is very effective if the teacher could use a combination of different teaching aids, such as whiteboards, flip charts, multimedia projectors, etc. in an organized way. Further interesting video clips related to the content of the lecture can be added to generate interest to the lecture. Rather than showing a too wordy slide or a lecture note, the teacher can use graphs and other illustrations to explain the same content. It greatly aids in remembering the content to the learners. Furthermore, the teacher can provide incomplete handouts like gap handouts instead of providing the complete handouts. Then the learners will actively participate in the lecture to complete the handout. As to match with each course, the teacher can select practical ways to motivate learners, such as simulations, case studies, and scenario-based learning. Storytelling is one such scenario-based learning. Learners tend to remember the content of the lecture better when it is presented in a story. Storytelling combines multiple elements of teaching and learning such as relevance, interactivity, entertainment, memorability to bring concepts in the course to real life.

Interaction in between the teacher and the learner within the lecture is also important. A positive relationship between the learner and teacher is critical for increasing learners' behavioral engagement as learners believe teachers care about them. Then the learners tend to have higher engagement than those without a positive learner-teacher relationship.

Questioning

Questioning also provides an active learning environment to the learners. While setting questions from a particular chapter, the teacher has a responsibility to set questions from different levels of Bloom's Taxonomy to check the learners knowledge, comprehension, application, analysis, synthesize, and evaluation. By setting and raising blended questions from all levels, the teacher will be able to assess learners' retention, comprehension as well as knowledge grasp, and skills.

It is better to ask questions from the entire class rather than asking from individuals. Then the learner is ready to find an answer as they don't know who will be the teacher's selection. It helps to keep the attention and involvement of the learners. Finally, the teacher can select learners randomly to answer the question. After raising a question to the learners, a sufficient time (about 5-10 seconds) should be given to think, organize, and formulate a response. Then the learners will engage with the task behaviorally and cognitively. Sometimes, the answer given by the learner may be incorrect or ill-conceived. This learner may be behaviorally engaged but not cognitively engaged. As teachers, we should respond in a way that the student to think

more deeply or to reconsider. The teacher should show interest in all answers and remember to thank learners who respond to his/her questions. Similarly, when the learners ask questions from the teacher, the teacher should not criticize learners' questions which may lead to discourage them to ask questions in coming sessions.

Tricky questions that the learners can answer "yes" or "no" should be avoided by the teacher. The learners can answer such closed-ended questions without a fully understanding or without thinking deeply. Open-ended questions are suitable for engaging learners in the discussion, as the answer to a particular open-ended question can create another question. Finally, it offers a chance for debating.

The teacher should set times during each lecture to ask questions or to discuss issues. According to the investigations, it has been found that a typical learner's attention period is limited to about 15-20 minutes. Hence, after about 15-20 minutes of lecture time, it is suitable to ask questions or discuss issues if any. When the teacher does this as a habit, the learners try to listen the lecture more actively to the lecture to answer the questions to be raised.

In addition to assessing learners, asking some questions gives a signal to the learners about the important materials and contents. Further, questioning helps learners to advance their knowledge and thinking. Especially, it provides opportunities for learners to develop their own critical thinking. Then both the behavioral and cognitive engagement can be improved.

Kinesthetic Learning

Kinesthetic learning refers to the use of physical motions and activities for learners during the teaching-learning process to stimulate learning or interest. Instead of asking learners to answer the questions aloud as discussed above under the 'Questioning' section, the teacher can ask learners to walk up to the whiteboard and answer the question verbally while writing the answer on the whiteboard. This type of learning uses multiple parts of the brain at the same time such as the various parts dedicated to speaking, writing, physical activity, etc. in the brain). Further, physical movement in class helps to keep learners from getting bored.

Learner-centered Learning Strategies to Promote Active Learning

Currently, learner-centered learning strategies are considered as the best strategies to promote active learning. Some of the strategies are explained below.

Corporative Learning

Here, a small group of learners is responsible for its own learning and the learning of all group members, and the teacher act as a facilitator. Learners in the group interact with each other to solve a problem, complete

a task, or achieve a goal. However, the teacher should consider about five principles and elements for successful corporative learning such as (i) positive interdependence in which each learner in the group should have a unique contribution to achieve the success of the group, (ii) individual accountability in which all group members are responsible for contributing their share, (iii) use of social, interpersonal, collaborative and small-group skills in which learners are encouraged to practice leadership, communication, decision making, and conflict management, (iv) face to face promotive interaction in which interact with learners in the group for helping, supporting, applauding and encouraging each other to achieve the group's targets (v) group processing which periodically assess what they are doing well as a team.

Jigsaw, think- pair- share, brainstorming, debating, role play are some of the common examples of corporative learning. In think- pair- share, initially learners are asked to engage in a silent reading to find an answer to the question provided by the teacher. After finding an answer individually, learners pair up and share their answers until they have a consensus on an answer. During the sharing process, the learner can enhance the skill of speaking and the skill of listening. Ultimately, the students will share their answers with the whole class. The Jigsaw method is appropriate for the disciplines/ subjects like language, literature, and social studies in which the learning materials are in the written narrative manner. Generally, cooperative learning is a good example to improve the diversified abilities of learners to increase their cognitive, emotional, and behavioral engagement as it develops higher-order thinking skills which enhances motivation, and improves interpersonal relations as well as applauding, enhancing motivation and peer relations.

Small-group Discussion

The group discussion method in teaching gives the power to enhance not only learners' interest and communication skills, but also to encourage them to develop skills in searching and adopting, reflecting, and building their confidence. Further, learners listen to group members' opinions and express their opinion. Then the learners can exchange their ideas. At the same time, the learners may enjoy the discussion as they don't need to make a huge effort. The learners' thinking skills can be improved and creativity among learners can be developed through group discussions. Furthermore, collaborative skills such as teamwork, tolerance, negotiation, compromise, content-based skills such as recall, comprehension, application, analysis, synthesize, and evaluation, and organizing and communication skills of learners can also be achieved. The teachers in higher education institutions should adopt a small group discussion method of teaching and learning to sufficiently empower learners to become creative and innovative in their learning activities.

Individual Presentation

When the learners have to do a presentation, they thoroughly go through the content and understand the topic before preparing and giving a presentation. In order to be mastery in the presentation topic, learners try to search a lot of books and other sources. When it comes to the presentation stage, the learners have the confidence to deliver the presentation. Then the learners' engagement in all the three dimensions named as behavioral, cognitive, and emotional can be seen throughout the task. Therefore, individual presentation helps to enhance learners' engagement and experience.

Problem-Based Learning

Problem- based learning (PBL) activities are mainly associated with solving problems in the real environment. Here, the learners work in small teams to tackle with real-life problems. As a learner-centered approach, PBL facilitates research, the use of theory into practice, and the application of course content to provide solutions to a specific problem. The task of the teacher is to help the learners by providing the required knowledge. The learner should apply the knowledge successfully. Once they practically learn through this process, they bring the things discovered back into the lecture room and apply it back to their academic works. Eventhough this method was initially developed for teaching in the field of health science, the teachers who are engaging in the field of science and technology also can successfully implement this method in order to improve the learners' motivation and engagement. Further, it helps to improve "real world" problem-solving skills, critical and dynamic thinking skills, learners' confidence in their decisions, and own learning. Further, learners can apply the skills they already have. If the learners have to use the skills they already have, their engagement on a particular task is high.

Reward Learners for Engagement

Acknowledging the effort of learners is another effective way to motivate them. Behavioral engagement as well as the emotional engagement of learners can be improved by acknowledging them. Learners' achievement can be acknowledged through different ways such as awarding a prize, certificates, publishing in a newsletter in the institute, etc. Out of them, certificates can be the most meaningful reward to motivate learners in higher education, because they not only want to build their skills but also they want to have something to show their achievement. Some higher education institutes issue this kind of certificate signed by the Dean of the faculty when the learner's semester Grade Point Average (GPA) is more than a particular value. After graduating, while finding an occupation, the learner can show their achievement to prospective employers. Therefore, the learners know the value of this kind of certificate and try to engage well with the works.

Always Offer Feedback

When the learners make errors, offering immediate feedback can make the lesson much more effective. When the learners are unable to understand a concept, as teachers, we should try to offer an alternative approach or explanation. This gives a chance for learners to correct mistakes/ misunderstandings. Then the learner feels comfortable with the clear content. It helps to improve emotional engagement as well as behavioral engagement. Further, it is not encouraged to ask for feedback later as it may cause to miss opportunities.

Summarize the Work at the End

Summarization is the closure activity at the end of a lesson. Then the learners can remind the whole lecture content shortly. The learners get the summary into their minds easily rather than the whole lecture content. If learners miss something at the explanation part of the lecture, they may sometimes catch it from the summary. Therefore, summarizing the work done at the last five minutes of the lecture will increase the retainability of the content.

Use of new Technology

Online and mobile technology can be used to provide active learning activities and to keep learners engaged even at the outside of the lecture room. The teacher can set small online quizzes for learners to complete within a given time period. Then the learners can select a convenient time for them and complete the task. Rather than facing a quiz in the lecture room, the learners participate in online quizzes actively as it is a new experience when compared with traditional lecture room quizzes and the current learners are bind with online and mobile technology. Further, the learners have the freedom to select physically and mentally comfortable time periods for the quiz not like in traditional lecture room quiz. In addition to that, if the learners can access the lecture material online, they can refer them at any time, even at the traveling. Then the opportunities for learner engagement are high.

Learner engagement is increasingly considered as one of the keys to address problems such as low achievement, boredom, and alienation, high dropout rates, etc. If teachers can enhance the learner engagement by focusing not only the teaching-learning methods discussed here but also by focusing other academic strategies, approaches, students' life, and culture, assessments, infrastructure, curriculum, etc., it will help the learners to be more successful in academic works as well as their lives in future.

[1] Zepke, N. and Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education, 11(3)*, 167-177. DOI: 10.1177/1469787410379680

Section 03

Alternative Approaches for Promoting Learner Engagement and Experience

CHAPTER 9

Blended Learning to Enhance Learner Engagement and Experience in the Lecture Room and Beyond

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Over the past few years, advancement in technology has changed the world in many ways, and the higher education sector is no exception. The present information age has thereby created a number of opportunities and resources which could be utilized to create a significant positive impact on the pedagogy of teaching, learner engagement, and experience in the higher education sector. Indeed, these technological changes have challenged the way the higher education institutes conduct their academic programs and compelled these institutes to embrace and integrate modern technology to facilitate a better knowledge transfer.

However, higher education institutes and the academia must ask themselves "how well they have integrated emerging technological developments into their academic programs, and teaching and learning methods". For instance, even today, lecturing is the most predominant mode of delivering knowledge in higher education institutes. Despite the availability of the latest technological developments, it is evident that still these institutes mostly rely on conducting lectures with a projector and PowerPoint slides, to transfer knowledge to large, diverse audiences. Not only that, it is a common complaint from the learners that lectures are "boring", "less interactive", "ineffective", and making them "unmotivated" to participate. Indeed, time to time, higher education institutes that aim at creating competent graduates need to critically evaluate the effectiveness of their teaching and learning methods, and identify the room for potential improvements.

More specifically, to cope with the challenges created by the rapid development of the technology, as higher education institutes, it is important to go beyond the traditional teacher-centered approaches and embrace the latest technology, resources, and tools into their teaching and learning strategies to facilitate student-centered education. Blended learning is one good example of such a strategy in which traditional and modern teaching

approaches are blended together to create a better student-centered learning experience.

What is Blended Learning?

With the recent technological developments, blended learning has gained a significant attention from the academia, scholars, learners and education policy makers. Mainly due to its ability to open up new avenues to maximize the effectiveness of the teaching and learning process, blended learning has become a hot topic among these stakeholders. However, it is not a completely new concept to the academic field and has been used by institutes, with or without proper understanding of its potential.

As the term itself explains, "blended learning" involves combining different teaching and learning methods. More specifically, it is defined as the *"thoughtful integration of classroom face-to-face learning experiences with online learning experience"*[1]. According to this definition, it is clear that blended learning is a teaching and learning approach which involves two major elements as, traditional face-to-face learning in the lecture room and e-learning.

The main idea behind blended learning is to optimize the learning process using the synergy of different learning methods combined together. However, the concept is not as simple as it sounds. It is worthwhile to note that blended learning is neither a complete deviation from the traditional learning methods nor a complete transformation towards internet-based learning. Most importantly, there is no single model that can be applied uniformly to any institute. It requires vigilant selection and integration of teaching-learning methods, which must be customized considering various contextual factors, to create a tailored knowledge transfer process to meet individual needs. Missing this important point has become the main reason behind many unsuccessful attempts of blended learning implementation in the higher education sector.

Bloom's Taxonomy and Blended Learning

The Bloom's taxonomy is one of the major learning theories used in higher education. The revised Bloom's taxonomy discusses about the cognitive domain and hierarchical levels of learning assigned to it namely; (a) Remember, (b) Understand, (c) Apply, (d) Analyze, (e) Evaluate, and (f) Create[2]. When implemented successfully, blended learning can support the achievement of these levels of the cognitive domain.

For instance, the basic level "remember" involves memorizing the concepts taught and then retrieving them from the memory when needed. The next level is "understanding" which involves explaining and interpreting the concepts learned. Through blended learning, lecturers can develop creative learning activities such as, online quizzes, puzzles, etc. which will help to ensure that students achieve the learning outcomes associated with

these learning levels. Blended learning can also facilitate the achievement of learning outcomes which are associated with the next level "apply". Compared to traditional face-to-face teaching, lecturers can easily facilitate effective collaboration opportunities through blended learning as it will provide more flexibility and opportunity for the learners to apply the learned knowledge to new situations.

The remaining higher levels in the cognitive domain are "analyze", "evaluate" and "create". Compared to traditional lecturing, blended learning can support the achievement of these higher learning levels as well. For example, these higher levels of learning involve gaining the ability to examine given information, make judgments, identify relationships, and create new knowledge. Through integrating blended learning, higher education institutes can facilitate more effective and efficient learning where learners are motivated to do self-learning. For instance, group activities such as, development and analysis of case studies, online research collaborations, etc. will help the students to improve their critical thinking, communication, and other cognitive skills.

The key idea is, when designed and implemented successfully, blended learning can facilitate the achievement of learning outcomes associated with these levels of learning as it provides the students with more flexibility, autonomy, opportunities, and motivation. Thus, by designing and integrating creative learning activities aimed at improving learners' cognitive skills, blended learning can help the achievement of more effective and efficient learning.

Blended Learning Tools

There are a number of virtual communication tools and techniques that can be integrated with traditional face-to-face teaching to facilitate online communication among learners and lecturers. These tools are important in blended learning as they will enable the participants to exchange real-time information and work collaboratively without limiting themselves to geographical barriers.

There are mainly two types of communication tools that can be used in blended learning as, asynchronous tools and synchronous tools[3]. In *asynchronous communication*, a time lag exists between information sending and receipt, whereas, in *synchronous communication*, communication occurs simultaneously in real-time. Some of the asynchronous tools that can be used in blended learning are, e-mail, blogs, discussion or message boards, audio or video files, etc. Some of the synchronous tools include but not limited to Zoom, Skype, social networking sites, and google apps, etc.

As per the definition, with synchronous communication tools, real-time information exchange can be facilitated, where the recipient can provide his or her response immediately. However, in an effective learning

management system (LMS), the use of both communication tools are important as they provide distinctive benefits to teaching and learning. For instance, a well-designed e-learning platform may include an effective blend of communication tools such as, emails to make important announcements, message boards to provide links to online resources, video conferencing tools to make live lecture sessions and brainstorming sessions, and online assessment tools, etc. Compared to a traditional lecture room setting, by integrating such virtual communication tools, blended learning can enhance the learning experience and engagement of the learners. For an example, with video conferencing technologies, learners can engage in live discussions with the lecturer or peers to clarify some points in a lesson or brainstorm ideas more actively.

Why Do We Need Blended Learning?

On top of being driven by the latest technological developments happening around the globe, blended learning has gained popularity in the higher education sector due to its ability to offer a number of potential benefits to the user. Some of the benefits of blended learning over other teaching and learning methods are discussed as follows.

Flexibility and convenience

Blended learning offers a greater flexibility and convenience to both the lecturer and the learner. In terms of the lecturer, blended learning can provide him or her with the flexibility in designing teaching methods, presenting the teaching material, and assessing the progress of learners. For instance, a lecturer can decide to conduct the initial lecture using face-to-face teaching while other lessons and additional readings on some complex topics can be offered via an e-platform. On the other hand, students can also conveniently enjoy the learning without being limited to a specified geographical location. For an example, students can decide when and where to go through a given learning material. Since learning material can be allowed for 24/7 access, learners can enjoy a greater degree of autonomy, convenience, and flexibility.

Self-paced learning

Along with the greater flexibility offered via the e-learning content, learners can engage in learning at their own desired pace. This is really important in today's context where the class sizes are getting bigger and more diverse. In general, each student is different in terms of their abilities, skills and learning capacity. Since the learning materials are available 24/7, learners have the opportunity to access and review them repeatedly until they get a better understanding. Therefore, it is beneficial for both fast-paced as well as a slow-paced student as it facilitates a fast-paced student to engage in activities offered in future lessons while providing an opportunity to a

slow-paced student to revisit taught lessons for any number of times until a better understanding is gained. This will allow all the students to be on the same page, which will also be helpful to the lecturer.

Customized content

In reality, lecturers are constrained with requirements to finish a specified content within a given period of time. This limits their ability to pay attention to the individual student all the time and cater for individual differences. However, by blending an e-based component into the teaching process, the lecturer can personalize the content to cater for individual needs and differences. For instance, a lecturer can provide extra assignments, additional readings, videos, and customized group activities for the learners who are in need of those. Learners who are good at reading may refer to additional reading material while those who are interested in creative things may improve their understanding by going through creative learning tools. Thus, with blended learning, the lecturer can tailor learning activities to meet individual learning needs and bridge the knowledge gap more effectively.

Use of different teaching styles

Compared to traditional face-to-face teaching in a lecture room, blended learning allows the lecturer to try out a number of different teaching methods that could cater diverse learning requirements. For an example, in addition to the PowerPoint slides or printed study material, a lecturer may use videos, images, online puzzles, and online readings that will support to improve the learners' understanding of a given topic. This provides the lecturer an opportunity to try out and develop unique teaching styles while the learners get to study materials which are tailored for them. Thereby, it will allow the lecturer to try out the most effective teaching styles that suit his or her capability and learners' knowledge absorption level.

More active engagement

One of the biggest challenges faced by the lecturers in higher education is keeping the learners engaged and interested in learning. In traditional face-to-face lecturing, it has become burdensome to maintain active learner engagement from the beginning to the end of a particular session. Blended learning is a good solution to overcome this as it is expected to result in higher level of learner engagement by providing more flexibility, convenience, and empowerment to the learner. In the present digital era, the young community spends most of their time with the digital technology. Since they are more familiar with and attracted to the latest technological developments happening around the globe, learners will naturally be more interested and engaged with technology blended learning. Lecturers can also set targets and create more meaningful and attractive

activities to keep the learners engaged and motivated. When implemented correctly, blended learning can significantly enhance learners' experience and keep them engaged beyond the lecture room boundaries.

Enhanced collaboration

One of the most important features of blended learning is that it facilitates collaboration among learners. For an example, it allows learners to get-together and participate in discussions, group activities, peer-reviewing, brainstorming, and many other activities that improve their engagement and collaboration. When the learners are given the opportunity to participate in such internet-based activities, it will significantly improve their motivation and level of engagement. This too is important in keeping the learners engaged in the learning process beyond the lecture room. The experience that the learners gain through their collaborative efforts will be useful in building their respective carriers as well.

Better communication and feedback

Integration of internet-based teaching components will be helpful in improving communication in the knowledge transfer process. For example, lecturers can easily provide any relevant information such as announcements, grades, instructions, etc. via e-learning tools and learners can conveniently access such information in real-time as well. Blended learning also allows both parties to communicate their concerns or feedback more conveniently compared to face-to-face communication. For an example, with blended learning, a lecturer can provide prompt feedback more efficiently. These features are also important for the learners as it will help improve their communication skills which are vital for a successful career.

Better achievement of learning outcomes

The ultimate objective of any lesson or lecture is to make sure that learners achieve the intended learning outcomes of the particular lesson. Since the blended learning enhances learners' motivation to engage in learning activities, it will increase the chances of achieving intended learning outcomes more effectively and efficiently. For instance, by providing the learners with the freedom to engage in learning activities conveniently without limiting themselves to time, location, pace, etc. institutes can achieve more focused learning which will ultimately ensure better achievement of the intended learning outcomes.

Extended reach

Since blended learning integrates e-learning components, it will allow higher education institutes to extend their reach without limiting themselves to physical barriers. For an example, these institutes can let

specific course contents to be done by experts from any corner of the world, without limiting themselves to time limits or geographical barriers. This will also provide higher education institutes access to high-quality learning material more productively.

Challenges of Blended Learning and Strategies to Overcome Them

In general, the implementation of any new initiative faces challenges, and implementing blended learning in the higher education sector is no exception. These challenges can occur in association with various aspects such as, technology, institution, lecturer, and learners, etc. In order to achieve a successful implementation of blended learning tools, it is essential to make sure that necessary strategies and measures are in place to overcome the identified challenges. Some of the possible challenges and recommendations to higher education institutes on strategies to overcome these challenges are explained below.

Implementation of blended learning only because the institutes are obligated

Identification of blended learning as an effective pedagogy and availability of adequate funding and other resources for its implementation have driven the wide use of blended learning tools among higher education institutes. In some instances, blended learning is used by institutes and lecturers only because they are obligated to do so. However, this creates a challenge of avoiding the implementation of blended learning tools spontaneously without any proper need assessment. For instance, despite the availability of funds, resources and all the necessary infrastructure, blended learning may not be successful unless these institutes identify their real need for implementation.

Thus, in order to overcome this, it is important to ensure that higher education institutes carry out a proper assessment of their needs, capabilities, resources, and identify the suitability and any potential barriers in implementation. Unless, it will not bring any improvement to the existing process. Thus, higher education institutes and lecturers must avoid following blended learning concepts blindly. To ensure a successful implementation, institutes can start by incorporating fundamental tools first and then gradually move toward a fully blended learning environment upon success.

Deciding the structure of the blended learning program that best meets the institution's needs

As explained in the concept of blended learning, there is no unique model that can be applied uniformly in every organization. For a successful blended learning program, it is important to adopt the learning tools in a way that matches the objectives of the course as well as the institution. Nevertheless, given the differences in each context, it is challenging to decide on the best combination of offline and online learning tools.

In order to overcome this challenge and to implement a well-designed blended learning program, any institution must pay attention to key decision factors. For an example, institutes or lecturers must decide which components of the course module require face-to-face interaction and also the components that can be done with minimal contact. In that way, institutes can decide how to utilize offline and online tools. For instance, in the beginning of a course module, a lecturer can choose to have a face-to-face meeting to provide an introduction to the course, get a clear idea about learners and ensure that they understand the fundamentals. However, making a decision about the structure of a blended learning program is not simple as it sounds.

Ensure Learners' support and readiness to move from a brick and mortar learning environment to a blended learning environment

As higher education institutes, one of the objectives of adopting blended learning is to enhance learners' engagement and learning experience. Thus, it is essential to ensure that learners are willing to adapt to a blended learning environment. Pressurizing them to adapt to such a new environment simply because the technology is in place may not work without their support and readiness. They may have a number of concerns which need to be addressed to make them feel ready for the new change. For an example, learners may be new to the use of e-learning platforms, online assessments, etc. and therefore, they may have technical difficulties which cannot be fixed by themselves.

Thus, in order to overcome such barriers, lecturers and institutes must design and use blended learning tools with caution. For instance, when introducing a course module in a blended learning environment, the lecturer can begin by using one new tool at a time. The use of too many new tools may complicate the learning process and thereby result in dissatisfaction with no willingness to engage actively in the learning process. For an example, the lecturer may create the teaching-learning tools and resources in a sophisticated manner by integrating a variety of technologies. However, if the learner cannot understand or use those in their learning process, then they might not create the intended impact.

Similarly, it is important to make sure that technical support is available when needed. For an example, if a learner faces with some technical problem, then he or she must have timely access to technical support to fix the issue. This can be achieved by maintaining a dedicated staff, such as Information Technology (IT) help desk to handle issues related to the institute's e-learning system. On the other hand, an initial survey can be conducted to assess learners' willingness to use e-learning. It will also be helpful to identify the needs and concerns of learners and thereby plan a well-designed academic program to avoid any resistance.

Learners' perception on traditional face-to-face learning as the best method

Even today, the most commonly used teaching method in the education sector is traditional face-to-face classroom teaching. Learners may resist to come out of this comfort zone as they believe it to be the most successful method of learning.

In a traditional lecture room setting, teaching effort, behavior of learners, and assessments are more clear compared to an e-learning environment. It also provides a sense of comfort and assurance to the learners. Thus, despite the evolvement of new technologies, learners might resist to leave their comfort zones and adapt to a blended learning environment. In order to overcome such a resistance, it is important to ensure a smooth and gradual transition from the brick and mortar learning environment. For instance, higher education institutes and lecturers must focus on building learners' confidence on the suitability of the new learning environment. Strategies must be implemented to make the learners familiarize with the blended learning tools. It is also essential to ensure that learners are properly guided on using online components. For an example, learners can be introduced to the blended learning environment gradually while providing them with adequate training, induction, technical support, and guidance.

Development of teaching tools and styles to match with the blended learning environment

Not only learners, but also lecturers may face issues in the implementation of a blended learning environment. Given their familiarity with the traditional lecture room teaching, proceeding towards a blended learning environment requires them to move out of their comfort zones and dedicate a lot of effort and time on the new system. For an example, blended learning will require lecturers to redesign the curricular, mode of delivery, lesson content, assessment tools, and many more. Most importantly, they too should possess a good knowledge about e-learning tools.

Therefore, higher education institutes must provide the lecturers with adequate training and facilities to build lecturers' capabilities and maintain motivation to teach in a blended learning environment. Furthermore, lecturers must be ready and willing to adopt these new tools and techniques with a positive attitude. For an example, compared to traditional teaching, when blended learning tools are used, lecturers will have to be more prepared to design new learning material and, provide continuous support and feedback to learners. Therefore, lecturers' commitment is a key ingredient for the successful implementation of blended learning.

Maintaining active learner engagement

Even with the implementation of a blended learning program, it may still be challenging to maintain active learner engagement. Without learners'

active participation and interest in learning activities, higher education institutes will not be able to achieve their expected outcomes. Thus, it is important to focus on implementing strategies to enhance learner engagement as well as their experience in a blended learning environment.

For an example, higher education institutes can modify their curriculum to allow more challenging subjects or activities. This will also be helpful for the students to improve their abilities while developing collaborative relationships. In addition, as higher education institutes, it is important to understand the dynamic nature of the learner expectations and demands. Therefore, in order to be successful, the blended learning environment should be designed considering these changing requirements as well as the differences in learners. Furthermore, it will also be effective, if the views of the learners can be considered in designing and implementation phases of blended learning systems.

The Key to the Successful Blended Learning Program

Despite how well a blended learning program is designed, there can be a number of other factors that may decide the success of the program. In order to ensure a successful blended learning program, higher education institutes must focus on developing their strength not only in technology, but also in human and other physical resources related to the blended learning system. Further, providing institutional support to both lecturers and learners is a key ingredient determining its success. For an example, enhancing the ability of learners and lecturers to use IT tools effectively in their teaching and learning is vital for the success of the new system and institutes must support it by providing necessary training programs regularly. Institutes can also maintain a dedicated IT staff to extend training and other support to the lecturers and learners when using e-learning systems.

However, the readiness and willingness of learners to adapt to the new learning environment can be considered as the most essential factor affecting the success of blended learning. Without a proper motivation and right attitude, learners may not adjust themselves to the new system, and institutes may not be able to enhance learner engagement and experience beyond the lecture rooms as expected.

Blended Learning: Will It Put an End to Traditional Face-To-Face Teaching?

Indeed, various teaching styles have different impacts on learners' engagement and experience. Traditional teaching methods have many weaknesses associated with them. However, as explained by the concept of blended learning, it is not about a complete deviation from traditional face-to-face teaching. The key idea behind blended learning is to integrate traditional lecture room learning with online learning, to facilitate more effective and efficient knowledge transfer process. Thus, blended learning will not completely destroy the concept of traditional face-to-face teaching.

With blended learning, learners will be more motivated to engage actively in learning as it provides them with more flexibility and autonomy. This will help to provide a sophisticated learning experience, where learners become inspired to engage in learning even beyond the lecture room walls. With a proper blend of offline and online teaching, institutes will be able to enhance the engagement and learning experience of learners beyond lecture rooms which will ultimately create better graduates for the development of the country.

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[1] Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in Higher Education. *Internet and Higher Education, 7(2)*, 95-105.

[2] Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into practice*, *41*(4), 212-218.

[3] Allan, B. (2007). *Blended Learning: Tools for Teaching and Learning*. London: Facet Publishing.

CHAPTER 10

Enhancement of Learner Engagement and Experience through Blended Learning: A Review

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Defining Blended Learning

Blended learning is an approach of integrating web-based teaching and learning methods with face-to-face classroom interactions. It facilitates learning in and beyond the classroom[1] via face-to-face and online teaching modes[2]. It is also recognized as an edification concept that connects technologically advanced active learning options in an online environment with socialization opportunities in a classroom[3]. Moreover, the intermixing and merging of traditional and online instructional forms to achieve educational goals would present in blended learning[4]. In other words, it is formed by combining the major advantages of conventional teaching methods with e- learning[5]. Researchers have explored the high effectiveness of incorporating face-to-face learning activities into mobile learning programmes to enhance collaborative learning in addition to computer-based e-learning[6]. Further, it was identified online social networks as one form of blended learning tools[7].

Blended learning is a complementary combination of conventional classroom learning and e-learning methods. Learner's perception about the learning mode, learning efficiency, and their outcomes need to be assessed after such kind of implementation[8]. To establish an effective teaching and learning platform at universities, the curriculum should be redesigned considering different strategies[9]. Selection of the most suitable mode of education directly affects learner engagement, learning experience, and final achievement[10, 11]. Hence, the incorporation of e-learning techniques into the higher education system is beneficial to be considered.

With the rise of digital technology, the use of tools, applications, and platforms as Google Classroom, YouTube, Zoom, Microsoft Teams, Google Meet, Skype, Moodle, Blackboard, Cloud-based contents, Learning Management Systems (LMS) has been increased. Cultural trends like a shift from television to YouTube, growth of social media, e-learning, distance learning, work from home, remote offices, etc. have emerged

simultaneously. Hence, the implementation of a blended learning environment in an educational set up is not a big challenge today.

Defining Learner Engagement

Depending on the theorist, different definitions of learner engagement were elaborated. Engagement can simply be defined as the active participation of a student in a learning activity[12]. It was considered that an engaged student is the student who is involved in learning and extracurricular activities, identifies herself/himself with the institute, and is willing to invest in learning by working extra to get better academic outcomes.

Dimensions of Learner Engagement

Learner engagement is a concept which consists of four components: behavior, emotion, cognition, and agency [13]. Behavioral engagement is the consciousness, endeavor, and tenacity of a student towards a learning activity [14,15]. The allowance of optimistic emotions like interest and the avoidance of pessimistic emotions like anxiety during a task can be considered as emotional involvement [14]. Cognitive engagement is the application or the utilization of profound learning strategies like elaboration instead of surface learning strategies like memorization as an attempt of learning by students[16]. Agentic engagement can be defined as the extent of students' contribution to the flow of instruction they receive in terms of asking questions, expressing preferences, and making clarifications accordingly[17]. Each component plays a unique role in learner engagement. They are dynamically inter-related and functionally intersected[18].

As per the available literature, the above model could be aligned under the blended learning perspective. However, there are several other models developed by conceptualized researchers where different aspects were proposed as influencing engagement[19].

How Blended Learning Enhance Learner Engagement

The tactic behind blended learning is to increase student engagement through e-learning activities while improving effectiveness.[20]. This approach helps students to improve critical thinking and problem-solving skills, interact with colleagues and society, and adjust for authentic evaluation methods in higher education enhancing their engagement in learning activities[5, 21, 22]. As per the available literature, it was identified an increment in utilizing collaborative learning tools such as blogs, clickers, wikis, social media sharing, and networking applications in courses of higher education[23,24]. Thus, such tools are highly supportive when designing assessment activities that increase the extent of student engagement with course work, their peers, and subject experts. Consequently, such activities will increase students' satisfaction and will support them to achieve the

ultimate goal of the course under a blended learning platform. In contemporary years, engagement has marked its relevance due to its significant relationships with variables such as mental health, classroom disciplines, and performance which are highly important under an academic context[25,26,27].

Defining Learner Experience

The vast array of experiences gained under different backgrounds and settings transform the perceptions of the learner, facilitate conceptual understanding, yield emotional qualities, and nurture the acquisition of knowledge, skills, and attitudes. In educational settings, learning experiences are ideally challenging, interesting, engaging, meaningful, and appropriate to learner needs. Learning experiences gained by the students can be considered as a main predictive factor of their future learning [28].

The learning experience is the process of identifying a need, finding an answer or resource, expanding and developing skills or specialized knowledge. To achieve such an experience, engage in learning activities during their normal workflow, interact with real people (peers, instructors, experts) coherently, developing some higher-order skills through practice, application, reflection, etc. are crucial.

How Blended Learning Enhances Learner Experience

An instant and positive emotional response like curiosity, accomplishment, and a sense can be generated in response to a worthy learning experience which enables the people who created the experience to understand the learners and their difficulties. Such spirits will encourage them to share ideas, promote further learning, and to gain from that experience.

Blended learning offers a highly interactive internet-based learning experience to the learners. Such an approach allows lecturers to follow novel teaching concepts than just doing a conventional lecture. It provides a chance to encourage students to study the course materials by accessing all magnitudes of learning. Lecturers could expect more from their students under a technologically advanced learning platform.

To increase the students' engagement in learning with the ultimate objective of gaining better achievements, it is necessary to shift into a different paradigm of learning. The creation of an educational setup where students can explore and engage in various types of learning activities is also important. Such a multi-level student engagement creates online links with other students, teachers, community, sophisticated course materials, and technological advances to get a highly interactive experience[29].

If an online course could build under such a learning environment, the students will expose to an unforgettable and interesting experience that encourages and enable them to do some inquiry-based, project-based, or

problem-based learning. The experiences gained by the students through this kind of cross-curricular activities are different from the experiences generated in an isolated classroom.

An important aspect of the interactive distance learning model is to request students to engage in real-world activities to comprehensively master the content. If it is a must for students to touch the material mentally, emotionally, and physically. Ultimately. they will develop authentic skills that will be useful for them in advance during their future academic and real-world career. If students must use all of the academic disciplines to do their work and produce a product that has to be viewed, reviewed, and restructured, they are motivated to learn different skills that they will require in a later stage of their lives[30].

Some Blended Learning Models and Methods

Flipped Classroom

A pre-recorded lecture (video, narrated PowerPoint presentation, etc.) is given to the learners to study during their leisure time at home. This is a good solution for the loss of students' attention during lectures. Students can link with colleagues and subject experts via interactive online discussions and forums.

The lecturer can give assignments, exercises, role-plays, etc. based on provided course materials and online activities. The learners are encouraged to apply learned concepts in class via teamwork and presentations actively.

The Rotation Models

Rotation models are most commonly used in blended learning. In rotation models, students are rotated physically among activities according to a fixed schedule or teachers' discretion. The time of moving to the next activity is determined by a person or an instrument like an alarm. Online work, small group activities, conventional pencil and paper assignments, discussions, or projects with the whole class are some of the learning strategies.

In rotation models, the online mode of instruction allows the students to learn at any convenient time. During the individualized instruction time, teachers can pay attention on each and every student under a classroom environment. In a traditional classroom where teachers are responsible for many students at once, it can be difficult to give each student one-on-one attention.

Problem-based Learning (PBL)

Other than directly presenting facts and theories, students are allowed to learn concepts and principles by studying a real-world problem. Critical thinking skills, problem-solving abilities, and communication skills

of the students will be developed through PBL. It can also provide opportunities for working in groups, finding and evaluating research materials, and life-long learning[32].

This is a method that facilitates experiential learning. The students are required to be involved in a process of critical thinking while examining problems that lack a well-defined answer. In PBL, a problem which only consists of preliminary information will be given to the students. Instead of studying how others have solved the problem, they have to work alone and solve the problem by their own effort as in a case study. They do not produce a product as in project-based learning and it is not necessary for them to work with the community if they do not need to collect data.

Project-based Learning

Project-based learning provides real-world tasks for students. Students are given the resources which they need to complete the given tasks. Students are independent to apply possible concepts and create their own answers based on the knowledge gained throughout the course[33].

It is beneficial to introduce strategies like inviting a guest speaker as an in-class activity where in-person attendance is encouraged. Limit the time dedicated to direct instructions and focus on supporting students, as they participate in testing activities. The aid they received to convert concepts into solutions are highly valuable for their professional improvement.

This is also an experiential learning method where students are provided with a complex problem with a number of potential and possible solutions. The students are given a task of developing a plan and creating a novel product or artifact that serves the purpose. Students are required to use many of their soft skills including critical thinking, teamwork, communication, empirical and quantitative analysis, and personality traits, and social intelligence to achieve the final goal.

Benefits of Blended Learning

According to past studies, blended learning may empower students to control their pace of learning as well as the learning environment when it is designed and implemented properly[34,35]. It can also be recognized as a novel technique which includes modern concepts of learning[36,37,38,39,40]. Several research studies have demonstrated that courses using blended learning as a delivery method contribute to improved learning outcomes for students[41,42,43,44,45]. Redesigning of courses with blended learning improves students to achieve higher grades, obtain more knowledge, and a better understanding of the course content[35,46].

Blended learning increases flexible access to learning as a key benefit. It strengthens the independent thinking power of the student who engages in research[47,48,49,50,51]. It facilitates conducting reviews and helps to apply control measures for learning activities[52]. Blended learning,

conceptualizes learning as an ongoing process than a single-time event. This motivates students to learn and be engaged in learning even they are away from the classroom[38] Learners have the advantage of studying course materials at any time after accessing the internet from anywhere.[39]. Blended learning empowers students to learn in their own pace, get immediate feedback when their answer goes wrong, have access to lessons and videos any time, submit assignments digitally, develop them to be independent, and promote independent learning[8].

Except the above advantages, blended learning facilitates various needs and interests of students including value-added learning. It further increases students' participation, the fun of learning, and team working efficiently. It provides a user-friendly and standard interface for courses[40].

Higher education institutes where blended learning concepts are implemented to get benefited via cost and resource effectiveness[5,46,54]. Costs bared by institutions for preparing and developing blended learning materials can be saved by placing those online and re-using for an extended period of time. Furthermore, the size of the cohort can be increased while reducing the number of classes. The use of blended learning can reduce the staff and student classroom contact time and consequently save on staffing expenses.

As reported, student satisfaction is higher in blended learning compared to lessons at conventional classroom[46,58]. It enables the students to become more motivated and more involved in the learning process, thereby enhancing their commitment and perseverance[50,55]. According to both staff and students, online components of blended learning helps to improve skills of critical thinking and learner experience[56,57]. Hence, it can be concluded that blended learning facilitates effective use of resources, access flexibility, high learner engagement, a sense of community, improved learning outcomes, memorable learner experience, and student satisfaction.

Challenges of Blended Learning

Blended learning can be a challenge for students and universities. Unrealistic expectations and feelings of isolation are challenges for students, while universities are challenged by time and support issues. Both students and institutions encounter challenges arouse with technological problems. According to some studies, unrealistic expectations can be seen among students who engaged with blended courses[59]. Some students are willing to enroll in blended courses assuming that less classes meant less effort. They had less skills in managing time and experienced problems with accepting the responsibility for personal learning. Students in such courses have also reported the feeling of isolation due to the reduced opportunities for social interaction in a face-to-face environment. Difficulties in adapting to modern technology is also a challenge in blended learning. Some students are unable to actively participate in online discussions due to poor internet

connection[60,61] and this continuous frustration may negatively affect their learning. Another challenge related to technology is possible disturbances may cause by pervasive access for the day-to-day life of the students. Further, the devoted learners allocate much more time for studies and less time for personal connections. Because of that participants become stressed and tired[62].

Time commitment is the first challenge for universities implementing blended learning. The time required to plan and develop a blended learning course with a large-enrollment is two-three times higher than the duration taken to design a similar course under a traditional context[65]. Lack of support for course designing is another challenge in universities. To ensure a successful blended learning experience for students, there must be a support for course redesigning. This may involve deciding what course objectives can be the best to be achieved through online learning activities, what can be the best to accomplish in a classroom, and how to join these two learning environments[42]. Difficulties in acquiring new technological skills, such as how to foster online learning communities, facilitate online discussion forums, and manage students[66] are also identified as challenges related to technology for universities implementing blended learning.

Success Factors for Blended Learning

Initially, both learners and lecturers must be trained to use tools of information technology. They should also be equipped with compatible electronic devices and internet facilities. The next requirement is to have a well-equipped technical center with dedicated staff who can support both learners and lecturers in implementing and progressing blended learning activities. The technological requirements such as stable internet connection and satisfactory speed must be maintained during blended learning courses[67]. According to the available literature, learners' readiness, attitudes, and skills for implementing such an approach[68,69] are equally important for successful implementation. In addition, the nature and differences in group interactions play a significant role in learning components of blended learning[70] .

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1 Bentley, T. (1998). *Learning beyond the classroom: Education for a changing world*. London: Routledge.

2 Cheung, K. S., Lam, J., Lau, N. & Shim, C. (2010). A paradigm in instructional design to support blended learning. *Proceedings from the International Conference on ICT in Teaching and Learning*, Singapore: Sims University.

3 Dziuban, C.D., Hartman, J. L. & Moskal, P. D. (2004). *Blended learning* EDUCAUSE Centre for Applied Research: Research Bulletin.

[4] Driscoll, M., (2002). Blended learning: Let's get beyond the hype. *E-learning*, *1*(4), 1-4.

[5] Graham, C.R. (2006). Blended learning systems: Definitions, current trends, and future directions. In Bonk, C., Graham, C. (Eds.), *The Handbook of Blended Learning: Global Perspectives, Local Designs* (pp. 3–21). Pfeiffer: San Francisco, CA, USA.

[6] Heflin, H., Shewmaker, J. & Nguyen, J., 2017. Impact of mobile technology on student attitudes, engagement, and learning. *Computers & Education*, *107*, 91-99.

[7] Thongmak, M. 2013. Social network system in classroom: Antecedents of edmodo© adoption. *Journal of e-Learning and Higher Education, 2013*(1), 1-15.

[8] Sahni, J. (2019). Does Blended Learning Enhance Student Engagement? Evidence from Higher Education. *Journal of e-Learning and Higher* Education, 2019(2019). DOI: 10.5171/2019.121518

[9] Bovill, C., Cook-Sather, A., Felten, P., Millard, L. & Moore-Cherry, N. (2016). Addressing potential challenges in co-creating learning and teaching: overcoming resistance, navigating institutional norms and ensuring inclusivity in student–staff partnerships. *Higher Education, 71*(2), 195-208.

[10] Honey, P. & Mumford, A. (1986). *The Manual of Learning Styles*. Maidenhead, Berkshire: Honey and Mumford,

[11] Biggs, J. & Tang, C. (2007). *Teaching for Quality Learning at University* (3rd ed.). Buckingham: SRHE and Open University Press.

[12] Christenson, S. L., Reschly, A. L. & Wylie, C. (2012). *Handbook of research on student engagement*. New York, NY: Springer. https://doi.org/10.1007/978-1-4614-2018-7

Coates, H. (2006). *Student engagement in campus-based and online education: University connections*. New York, NY: Routledge.

[13] Reeve, J. & Tseng, C. M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology, 36*(4), 257-267. https://doi.org/10.1016/j.cedpsych.2011.05. 002

[14] Skinner, E. A., Kindermann, T. A. & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*(3), 493-525.

[15] Leon, J., Nunez, J. L. & Liew, J. (2015). Self-determination and STEM education: Effects of autonomy, motivation, and self-regulated learning on high school math achievement. *Learning and Individual Differences*, 43, 156-163.

[16] Walker, C. O., Greene, B. A. & Mansell, R. A. (2006). Identification with academics, intrinsic/ extrinsic motivation, and self- efficacy as predictors of cognitive engagement. *Learning and individual differences, 16*(1), 1-12.

[17] Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, 105, 579-595.

[18] Skinner, E. A., Furrer, C., Marchand, G. & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*(4), 765-781

[19] Halverson, L. R., & Graham, C. R. (2019). Learner engagement in blended learning environments: A conceptual framework. *Online Learning*, *23*(2), 145-178. https://doi.org/10.24059/olj. v23i2.1481

[20] Whitelock, D. & Jefts, A. (2003). Editorial: Journal of Education Media Special issue on blended learning. *Journal of Educational Media*, 28(2-3), 99-100.

[21] Norberg, A., Dziuban, C.D. and Moskal, P.D. (2011). A time-based blended learning model. *On The Horizon*, *19*(3), 207-216.

[22] Mayadas, F.A. and Picciano, A.G. (2007). Blended learning and localness: The means and the end. *Journal of asynchronous learning networks, 11*(1), 3-7.

[23] Archambault, I. & Vandenbossche-Makombo, J. (2014). Validation de l'Échelle des dimensions de l'engagement scolaire (ÉDES) chez les élèves du primaire. *Canadian Journal of Behavioural Science*, *46*(2), 275–288.

[24] Van Rooij, E. C., Jansen, E. P. & van de Griftdropout, W. J. (2017). Secondary school students' engagement profiles and their relationship with academic adjustment and achievement in university. *Learning and Individual Differences*, *54*, 9-19.

[25] Wang, M. T. & Fredricks, J. A. (2014). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development*, *85*(2), 722–737.

[26] Wang, M. T., Chow, A., Hofkens, T. & Salmela-Aro, K. (2015). The trajectories of student emotional engagement and school burnout with academic and psychological development: findings from Finish adolescents. *Learning and Instruction, 36*, 57-65.

[27] Hagenauer, G., Hascher, T. & Volet, S. E. (2015). Teacher emotions in the classroom: Associations with students' engagement, classroom discipline, and the interpersonal teacher student relationship. *European Journal of Psychology of Education, 30*(4), 385-403.

[28] IBE (2013). Glossary of curriculum terminology, IBE-UNESCO. Retrieved from http://www.ibe.unesco.org/fileadmin/user_upload/Publications/IBE_GlossaryCurriculumTerminology2013_eng.pdf.

[29] Martin, F. & Bolliger, D.U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning, 22*(1), 205-222. doi:10.24059/olj. v22i1.1092

[30] Joseph, S. (2013). Strategies for enhancing student learning experiences in higher education. *Caribbean Teaching Scholar*, *3*(2), 97-109.

[31] Volchenkova, K. N. (2016). Blended learning: Definition, models, implications for higher education. *Educational Sciences, 8*(2), 24-30.

[32] Duch B. J., Groh S. E. & Allen D. E. (2001). Why problem-based learning? A case study of institutional change in undergraduate education. In B. Duch, S. Groh & D. Allen (Eds.). *The power of problem-based learning,* (pp.3-11). Sterling, VA: Stylus.

[33] Bell, S. (2010). Project-based learning for the 21st century: skills for the future. The Clearing House: *Journal of Educational Strategies, Issues and Ideas, 83*(2), 39-43.

[34] Becker, D.A.A. & Dwyer, M.M. (1994). Using hypermedia to provide learner control. *Journal of educational multimedia and hypermedia, 3*(2), 155-172.

[35] Twigg, C. A. (2003). Models for online learning. *EDUCAUSE review, 38*(5), 28-38.

[36] Salamonson, Y. & Lantz, J., (2005). Factors influencing nursing students' preference for a hybrid format delivery in a pathophysiology course. *Nurse Education Today, 25*(1), 9-16.

[37] Allen, I.E., Seaman, J. & Garrett, R. (2007). *Blending in: The extent and promise of blended education in the United States*. Newburyport: Sloan Consortium.

[38] Poon, J. (2013). Blended learning: An institutional approach for enhancing students' learning experiences. *MERLOT Journal of Online Learning and Teaching, 9*(2), 271-289.

[39] Owston, R., York, D. & Murtha, S. (2013). Student perceptions and achievement in a university blended learning strategic initiative. *The Internet and Higher Education, 18*, 38-46.

[40] Dias, S.B. & Diniz, J.A. (2014). Towards an enhanced learning management system for blended learning in higher education incorporating distinct learners' profiles. *Journal of Educational Technology & Society, 17*(1), 307-319

[41] Boyle, T., Bradley, C., Chalk, P., Jones, R. & Pickard, P. (2003). Using blended learning to improve student success rates in learning to program. *Journal of Educational Media*, 28(2-3), 165-178. doi:10.1080/1358165032000153160

[42] Dziuban, C., Hartman, J., Juge, F., Moskal, P. & Sorg, S. (2006). Blended learning enters the mainstream. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 195-208). San Francisco, CA: Pfeiffer.

[43] Garnham, C. & Kaleta, R. (2002). Introduction to hybrid courses. *Teaching with Technology Today*, *8*(6). Retrieved from http://www.uwsa.edu/ttt/articles/garnham.htm

[44] Lim, D. H. & Morris, M. L. (2009). Learner and instructional factors influencing learning outcomes within a blended learning environment. *Educational Technology & Society, 12*(4), 282-293.

[45] O'Toole, J. M. & Absalom, D. J. (2003). The impact of blended learning on student outcomes: Is there room on the horse for two? *Journal of Educational Media, 28*(2-3), 179-190. doi:10.1080/1358165032000165680

[46] Twigg, C. A. (2003). Improving learning and reducing costs: New models for online learning. *EDUCAUSE Review, 38*(5), 28-38.

[47] Chambers, M. (1999). The efficacy and ethics of using digital multimedia for educational purposes. In A. Tait & R. Mills (Eds.), *The convergence of distance and conventional education: Patterns of flexibility for the individual learner* (pp. 5-16). New York, NY: Routledge

[48] Lebow, D. (1993). Constructivist values for instructional systems design: Five principles toward a new mindset. *Educational Technology Research & Development, 41*(3), 4-16. doi:10.1007/BF02297354

[49] Radford, A. (1997). The future of multimedia in education. *First Monday*, *2*(11). Retrieved from http://www.firstmonday.org/article/view/560/481

[50] Sharpe, R., Benfield, G., Roberts, G. & Francis, R. (2006). *The undergraduate experience of blended e-learning: A review of UK literature and practice.* The Higher Education Academy. Retrieved from http://www.heacademy.ac.uk/assets/documents/teachingandresearch/Sharpe_

Benfield_Roberts_Francis.pdf

[51] Tam, M. (2000). Constructivism, instructional design, and technology: Implications for transforming distance learning. *Educational Technology & Society, 3*(2), 50-60.

[52] Osguthorpe, T. R. & Graham, C. R. (2003). Blended learning environments: Definitions and directions. *Quarterly Review of Distance Education, 4*(3), 227-233.

[53] Garrison, D. R. & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education, 7*(2), 95-105. doi: 10.1016/j.iheduc.2004.02.001

[54] Vaughan, N. D. (2007). *Perspectives on blended learning in higher education. International Journal on E-Learning, 6*(1), 81-94.

[55] Donnelly, R. (2010). *Harmonizing technology with interaction in blended problem-based learning. Computers & Education, 54*(2), 350-359. doi: 10.1016/j.compedu.2009.08.012

[56] Wang, M., Shen, R., Novak, D. & Pan, X. (2009). The impact of mobile learning on students' learning behaviours and performance: Report from a large blended classroom. *British Journal of Educational Technology, 40*(4), 673-695. doi:10.1111/j.1467-8535.2008. 00846.x

[57] Woltering, V., Herrler, A., Spitzer, K. & Spreckelsen, C. (2009). Blended learning positively affects students' satisfaction and the role of the tutor in the problem-based learning process: Results of a mixed-method evaluation. *Advances in Health Sciences Education, 14*(5), 725-738. doi:10.1007/s10459-009-9154-6

[58] Owston, R., Wideman, H., Murphy, J. & Lupshenyuk, D. (2008). Blended teacher professional development: A synthesis of three program evaluations. *The Internet and Higher Education, 11*(3-4), 201-210. doi: 10.1016/j.iheduc.2008.07.003

[59] Vaughan, N. D. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning, 6*(1), 81-94.

[60] Smyth, S., Houghton, C., Cooney, A. & Casey, D. (2012). Students' experiences of blended learning across a range of postgraduate programmes. *Nurse Education Today, 32*(4), 464-468. doi: 10.1016/j.nedt.2011.05.014

[61] King, K. P. (2002). Identifying success in online teacher education and professional development. *The Internet and Higher Education, 5*(3), 231-246. doi:10.1016/S1096-7516(02)00104-5

[62] Hara, N. (2000). Student distress in a web-based distance education course. *Information, Communication & Society, 3*(4), 557-579. doi:10.1080/13691180010002297

[63] Hara, N. & Kling, R. (1999). Students' frustrations with a web-based distance education course. *First Monday, 4*(12). Retrieved from http://www.firstmonday.org/article/view/710/620

[64] Welker, J. & Berardino, L., (2005-2006). Blended learning: Understanding the middle ground between traditional classroom and fully online instruction. *Journal of Educational Technology Systems, 34*(1), 33-55. doi:10.2190/67FX-B7P8-PYUX-TDUP

[65] Johnson, J. (2002). Reflections on teaching a large enrollment course using a hybrid format. *Teaching with Technology Today, 8*(6). Retrieved from http://www.uwsa.edu/ttt/articles/jjohnson.htm

[66] Voos, R. (2003). Blended learning – what is it and where might it take us? *Sloan-C View*, 2(1), 2-5. Retrieved from http://www.sloan-c.org/publications/view/v2n1/blended1.htm

[67] Stewart. J. M. (2002). A blended e-learning approach to intercultural training. *Industrial and Commercial Training, 34*(7), 269-271. doi:10.1108/00197850210447264

[68] Baldwin-Evans, K. (2006). Key steps to implementing a successful blended learning strategy. *Industrial and Commercial Training, 38*(3), 156-163. doi:10.1108/00197850610659427

[69] Mitchell, A. & Honore, S. (2007). Criteria for successful blended learning. *Industrial and Commercial Training, 39*(3), 143-149. doi:10.1108/00197850710742243

[70] Shu, H. & Gu, X. (2018). Determining the differences between online and face-to-face student–group interactions in a blended learning course. *The Internet and Higher Education, 39*, 13-21. https://doi.org/10.1016/j.iheduc.2018.05.003

CHAPTER 11

The Relevance of E-Learning in Higher Education

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Introduction

E-learning can be simply defined as the process which enabled access to teachers for online teaching and students for online learning through online resources via information and communication technology[1]. This enables teachers and learners in the higher education system to bridge the knowledge gap between two different geographical locations without barriers. Due to the globalization of the education system, today e-learning has become one of the necessary tools used in higher education. The growth in the information and communication technologies (ICT) and the use of e-learning platforms such as Learning Management Systems (LMS) and video conferencing tools add no doubt to globalization in higher education. The users in e-learning can easily break down the knowledge gap which is created due to the geographical and social boundaries in the world. E-learning will lead to integrations of academic standards and views which enables students to learn a particular field of study at a very high satisfactory level.

E-learning platforms, tools, and procedures will embrace virtual education opportunities, web-based learning, computer-based learning, and digital partnership in the higher education system. Under the e-learning, the contents of an academic program will be delivered to the students through the standardized online learning platforms such as Learning Management Systems (LMS), the form of voice embedded PowerPoint presentations, texts, graphs, images, videos, audios, and animations.

The e-learning models of higher education find their origins in the conventional distance in higher education. The main reason for introducing e-learning to higher education is to solve the issues faces by the students due to the geographical boundaries. This allows students in rural and remote areas to get easy access to higher education via information and communication technology without any geographical barrier.

Development of the e-learning in higher education is mainly due to the technological advancement which occurs during the last few decades.

More recently, due to the arrival of internet technology has enabled incredible innovation in the delivery of teaching in higher education. At present more people can gain access to internet technology is mainly due to the decrease in the prices of technical devices such as computers, smartphones, tablets and the increasing of the overall computer literacy level of the people's lives around the world. This will lead to creating an increasing trend in delivering educational content via e-learning platforms.

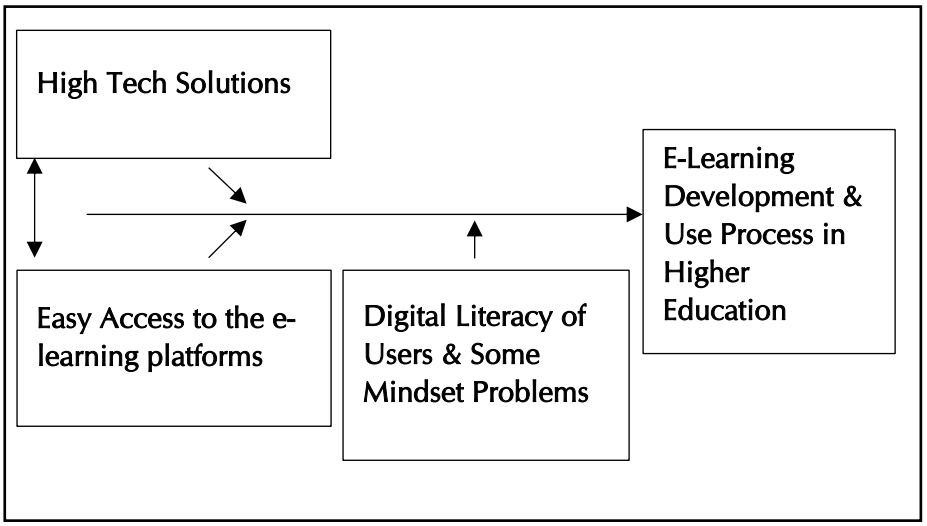

Figure 01: E-Learning Development and Used in Higher Education

According to figure 01, due to the availability of high-tech solutions such as high-speed internet connections and easy access to e-learning platforms in higher education, today there is a massive development in the use of e-learning in the education system. However, due to some low digital literacy of the teachers and students and some mindset problems some are not like to engage in the e-learning tools for teaching and learning in higher education.

E-Learning Theory

E-learning theory mainly comprises of cognitive science principles. Cognitive science principles explain how e-learning technology is designed and how e-learning can be used to promote effective teaching and learning practices in higher education. Mayer & Moreno[2] define cognitive load theory as the quantity of mental determination involved in the working memory of the users of e-learning. These mental effort amounts are mainly categorized into three categories, such as germane cognitive load, intrinsic cognitive load, and extraneous cognitive load.

Germane cognitive load defines the strength made by the students involved in understanding a particular task and the effort made by the

students to store it in the long-term memory. Intrinsic cognitive load refers to the effort made by the students involved in performing a particular task. The extraneous cognitive load is described as to some extent effort made by the teachers in higher education to deliver a particular task to the students.

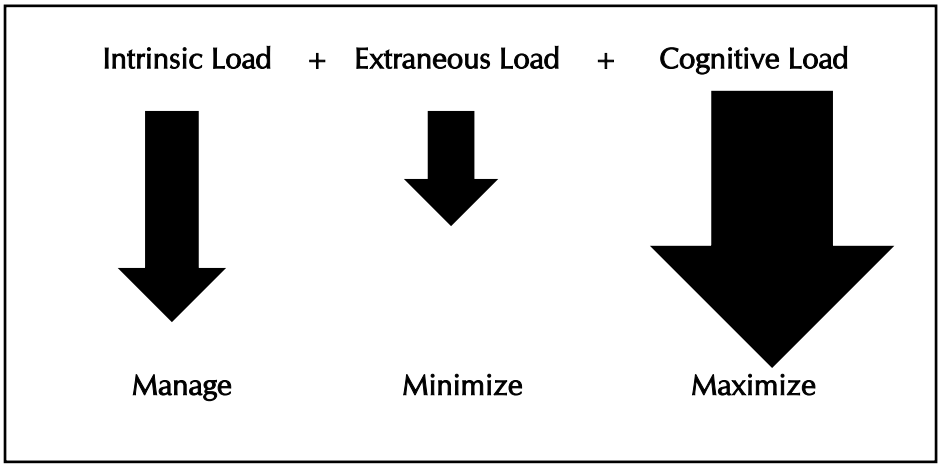

Figure 02: Cognitive Load Theory

According to figure 02, the e-learning design principles should be more focused on minimalizing extraneous cognitive load principles and introducing germane loads and intrinsic loads at a suitable level[3]. The following principles are included in the e-learning designing process.

Multimedia Principle

Multimedia principle or multimedia effect explains how the effective designing of e-learning materials such as videos, audios, animations, e-books, power-point presentations improves the learning experiences[4]. According to this principle, the learner in higher education should engage in five main types of cognitive processes. They are selecting appropriate words for processing in vocal working memory, selecting appropriate and suitable imageries for processing in graphic working memory, properly establishing the particular words into an oral model, organizing chosen imageries into a pictographic model, and finally incorporating the verbal and graphic demonstrations with previous knowledge obtained from long-term memory.

Modality Principle

E-Learning is very much useful when visuals are accompanied by the audio narrations[5]. When the audio narrations are embedded in the learning materials such are PowerPoint templates, it is helpful to the learners in higher education to use such content as reference materials at the time when they are required. If the audio descriptions are available with it, students feel very

much convenient to understand the things which are available in the learning materials.

Coherence Principle

The coherence principle believes that learners who are well known about the presentation content will be highly unfocused by dissimilar contents such as unrelated video, irrelevant audios, extraneous graphics, etc.[6]. Therefore, to avoid the distraction faced by the students, irrelevant content should be cut out from the e-learning materials. However, some learners in higher education who have some previous knowledge will increase learner motivation and interest with unrelated content that is available in the e-learning materials.

Contiguity Principle

The contiguity principle in e-learning stated that learning is more effective when the learning materials are presented strictly together with graphics, tables, figures, and other explanation materials[7]. According to this principle, the relevant text in e-learning materials should be placed much closer to the graphics, which are included in the document.

Segmenting Principle

The segmenting principle in e-learning demonstrates that more effective e-learning happens when the entire lesson is broken down into smaller sessions[8]. Breaking down the longer lessons into smaller chunks enables students in higher education to promote more in-depth knowledge.

Signaling Principle

The signaling principle explains the importance of using effective methods of signaling in higher education. Signals such as highlighting, use circles and arrows are some of the essential characteristics when conducting teaching via the e-learning platform[9]. This principle further explains that, these methods useful to end a lesson section after giving important and motivational information to the students.

Learner Control Principle

The learner control principle explains that the availability of the controlling power in the e-learning platform for the student will enable them to learn a particular field of study more efficiently and effectively[10]. Advanced learners in higher education will get benefit from having a controlling power because they get the ability to play or pause the lesson when they sense the part is important.

Personalization Principle

The personalization principle states that the tone of the voice of the teacher will enable learners to promote deeper learning in higher

education[11]. Based on this principle, beginners will get more benefits from a polite and respectful tone of the teacher, while learners with previous knowledge in higher education may benefit from a straight tone of voice of the teacher.

Pre-training Principle

The pre-training principle demonstrates that introducing some critical content, concepts, and vocabulary at the starting point of the e-learning teaching sessions will enable students for more in-depth learning[12]. This principle can apply more to the learners who are having little prior knowledge and high to the learners who are having more previous knowledge in the higher education system.

Redundancy Principle

The redundancy principle demonstrates that having visuals explained by both audio and text will create redundancy in teaching and learning in higher education[13]. According to this principle, the furthermost effective method in the e-learning environment is to use whichever an auditory description or texts to supplement the illustrations.

Types of E-Learning in Higher Education

E-Learning in higher education can be mainly divided into three different types.

Web-Supplemented E-Learning

Under the web-supplemented e-learning method, courses are more focused on traditional classroom-based teaching. According to this e-learning type, teachers in higher education only get some support from the e-learning processes such as uploading a study manual and lecture materials to the online learning platform, sending e-mails, and providing links for students in higher education.

Web-dependent E-Learning

Under the web-dependent e-learning method, study courses require students to use web-based technology such as participating in online discussions, engaging in online assessment, or online project/collaborative work. Here, these above activities are going in parallel with the physical classroom activities therefore this will not considerably reduce the physical classroom activities of both the teachers and the learners in the higher education system.

Mixed-Mode of E-Learning

Under the mixed-mode of the e-learning method, the e-learning elements and tools are used while conducting the teaching and learning

activities in the physical classroom time. E-learning elements and tools such as online discussions, online assessments/quizzes will replace traditional teaching and learning practices.

Approaches to E-Learning in Higher Education

Computer-Based Learning

Under this approach, computers including desktops and laptops are used as main and necessary components in the educational environment. The computer-based learning approach includes the use of computers and other types of electronic equipment in a classroom for teaching and learning purposes.

Computer-Based Training

The computer-based training approach can be an excellent alternative to traditional teaching approaches. Under this approach rich learning materials such as audios, videos, and animations can easily be embedded in the students learning activities. This will reduce the cost incurred in higher education as this method limit the number of printed materials used in the higher education system. This method is highly successful for the students who are following the self-study practices.

Computer-Supported Collaborative Learning

Computer-supported collaborative learning can be defined as one of the most encouraging innovations to improve efficiency and the effectiveness of teaching and learning in the higher education system. Under this method, instructional approaches are designed to motivate the students to work together efficiently with the teacher on learning a particular task.

Technology Enhanced Learning

The primary vision of the technology-enhanced learning approach is to offer socio-technical innovations, improve the efficiency of the teaching and learning, and to cut down unnecessary in the higher education system. This approach can be applied to the support of any e-learning activities used by higher education institutions throughout the world.

Information and Communication Technologies Used in E-Learning in Higher Education

Information and communication technologies used in e-learning in higher education can be mainly classified as asynchronous technology and synchronous technology. Asynchronous technology means that learners in higher education can execute multiple things at a time in the e-learning platform. Tools such as online blogs, wikis, and online discussion boards are coming under asynchronous technology. Under the asynchronous

technology, teachers, and learners in higher education can exchange their ideas and relevant information without the reliance on other participant's associations at the same time. This learning will enable the learner in higher education to work at their place at any time. Teachers and learners in the higher education system who are having health problems or have child care responsibilities normally face difficulties to deliver and attend the lectures. By using this method, teachers and learners in the higher education system have the chance to finish their educational tasks under a low-stress environment in a very flexible time frame.

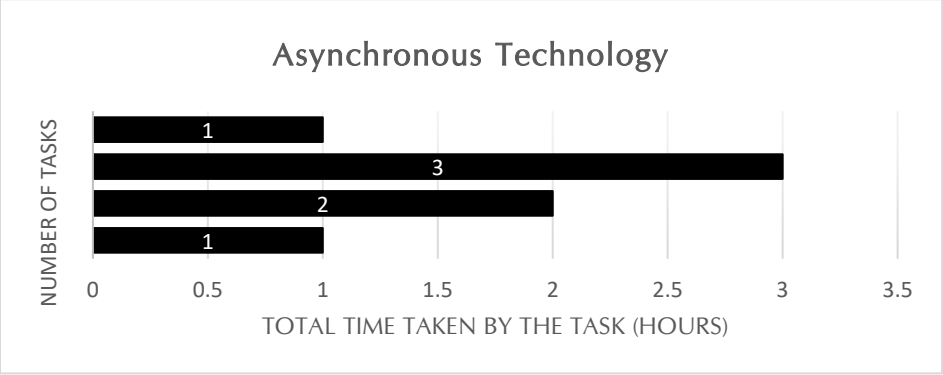

Figure 03: Asynchronous Technology

Synchronous technology in higher education means teachers and learners in higher education exchange their pieces of information and ideas with other participants during the same period. Learning Management System (LMS), online video conferencing tools, and Learning Content Management System (LCMS) are some of the e-learning platforms used for delivering higher education under synchronous technology. Synchronous technology does not provide the opportunity to the learners in higher education to carry out multiple tasks at one time in the e-learning platform.

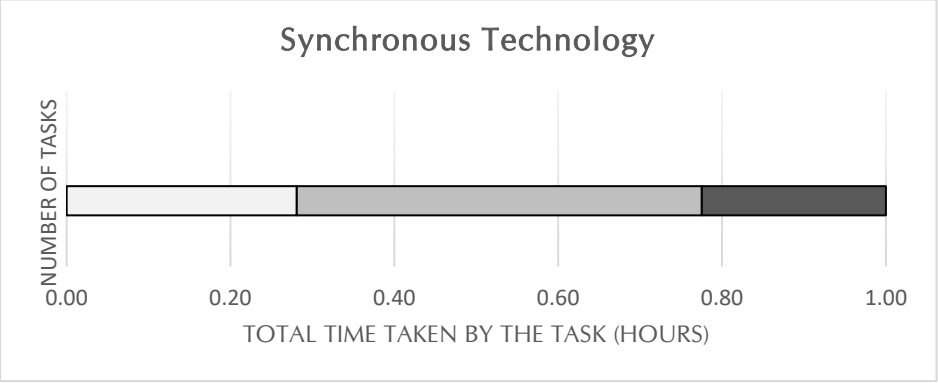

Figure 04: Synchronous Technology

Benefits of E-Learning in Higher Education

The main aim of using e-learning in higher education is to improve the quality of the learning experience of both the teacher and learner who are involved in the higher education system. The e-learning tools and techniques which are used in higher education will enable creating an efficient environment for both teachers and learners to become more advanced in delivering the teaching and learning and to make significant differences in out of box thinking. The following are the benefits that can be earned by adopting e-learning in the higher education system.

Saves the Cost and Time of the Users in Higher Education.

Adopting e-learning in higher education will help eliminate the unnecessary expenses in printing learning materials used in the traditional learning system. This also will save the additional traveling time of both teacher and the learner in higher education.

Enabling Instant Access to the Up to Date Information.

Electronic based teaching platform in higher education allows teachers to update their up to date learning materials to learners instantly without any delay. Updated e-learning materials will enable teachers to keep the contents of the subjects fresh and reliable and provide easy access to the learners to the most updated information and materials in the specific field of study.

Improve the Student's Retention Through Different Personalized Learning Tools.

E-learning in higher education allows more opportunities for learners to learn a specific field of study from different learning styles. Due to the full availability of access at any time to the e-learning environment, learners in higher education can learn at their own place and they can also revise their lessons through e-learning course material when needed.

Improve the Collaboration and Interactivity Among Students in Higher Education.

Electronic learning solutions in higher education can enable learns to collaborate and interact with experts of a particular field of study in the world. Techniques used in the e-learning platform such as online reference materials, online mentoring, and coaching, online discussion forums enable the creation of an interactive and collaborative environment for the learners in higher education.

Creates a Risk-Free Learning Environment.

Learners in higher education can enter into a full risk-free learning environment in which the learners get chances to try out new things and make mistakes and failures without revealing themselves. These features are

valuable when the learners trying to learn new soft skills such as good governance, leadership, problem-solving, and effective decision making.

Challenges in E-Learning in Higher Education

Courses offered using electronic platforms in higher education make particular demands of the learners in the higher education system. Inevitably, using a networked computer as a more upper study tool, both the teacher and the learner in higher education need to be mastered in Information and Communication Technology (ICT) and also they need to become familiarized in both software and hardware tools used in the e-learning environment. Apart from this, teachers and learners in higher education need to learn how to use the computer and electronic devices used in e-learning as a study material. In addition to learning through the e-learning platform, both the teachers and the learners should master in managing their e-learning teaching and learning materials efficiently and effectively in their electronic devices which are used in the e-learning environment. These are the main challenges faced when adopting e-learning in the higher education system.

Improving the Quality of Higher Education Through E-Learning

E-Learning can be used to improve the quality and effectiveness of the higher education system throughout the world. This enables teachers and learners in higher education to increase their flexibility of teaching and learning experience at a lower cost. E-Learning also enables the innovation of new ideas through collaborative learning practices.

Today students in higher education try to constructing new innovative content in a particular field of study instead of just absorbing past theories. Learners in higher education require modern technologies like m-learning, e-learning, virtual learning, and web learning to have an interactive learning environment. Due to the emergence of Social media, blogging, and YouTube channels learners in higher education always try to gather up to date knowledge regarding a particular field of study. These improvements in the education system through the e-learning tools will improve the quality of teaching and learning in the higher education system.

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[1] Abbad, M. M., Morris, D., & de Nahlik, C. (2009). Looking under the bonnet: Factors affecting student adoption of e-learning systems in Jordan. *International Review of Research in Open and Distance Learning*, *10*(2), 1–25.

[2] Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational psychologist*, *38*(1), 43-52.

[3] Moreno, R., & Mayer, R. E. (1999). Cognitive principles of multimedia learning: The role of modality and contiguity. *Journal of Educational Psychology, 91, 358-368*.

[4] Moreno, R., & Mayer, R. (2007). Interactive multimodal learning environments. *Educational Psychology Review*, *19*(3), 309-326.

[5] Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. New Jersey: John Wiley & Sons.

[6] Mayer, R. E. (1989). Systematic thinking fostered by illustrations in scientific text. *Journal of Educational Psychology, 81*(2), 240-246.

[7] Low, R., & Swelle, J. (2014). The Modality Principle in Multimedia Learning. In R. E. Mayer (Ed.), *The Cambridge Handbook of Multimedia Learning - Cambridge Handbooks in Psychology* (pp. 227-246). Cambridge: Cambridge University Press.

[8] Mayer, R. E., & Anderson, R. B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology, 8*(4), 444-452.

[9] Mayer, R. E., & Gallini, J. K. (1990). When is an illustration worth ten thousand words? *Journal of Educational Psychology, 82*(4), 715-726.

[10] Mayer, R. E., & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology, 90*(2), 312-320.

[11] Mayer, R. E., & Sims, V. K. (1994). For whom is a picture worth a thousand words? Extensions of a dual-coding theory of multimedia learning. *Journal of Educational Psychology, 86*(3), 389-401.

[12] Moore, D. M., Burton, J. K., & Myers, R. J. (1996). Multiple channel communication: The theoretical and research foundations of multimedia. In D. H. Jonassen (Ed.), *Handbook of research for educational communication and technology* (pp. 851-875). New York: Macmillan.

[13] Mousavi, S., Low, R., & Sweller, J. (1995). Reducing cognitive load by mixing auditory and visual presentation modes. *Journal of Educational Psychology, 87*(2), 319-334.

CHAPTER 12

E-learning: A Tool to Enhance Learner Engagement and Experience in Higher Education

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E-learning

E-learning can technically define as any form of learning, teaching or education process that is supported, and empowered by the use of various digital technological tools, and delivered particularly using Internet technologies. Pedagogically, in order to be effective, it should be an interactive, two-way process between teachers and students in which digital technologies emphasize mainly on teaching and learning process while the technology plays its role only as a tool that complements the process[1].

During the last couple of years, education is becoming more and more universal, and also the demand for higher education is ever increasing. Among the options to cater to this increasing demand, the introduction of e-learning into the higher education system was the choice opted by many leading institutes worldwide. With time, it is realized that e-learning as a comparatively faster and cheaper method which facilitates easy access to education by any number of students from anywhere at any time, and with these unique features, it was well accepted among the educationists worldwide and rapidly paved its way into the education system in most of the developed countries and then gradually into the developing countries.

Originally e-based learning is widely used only by higher education institutions with a mission of various distance learning programs, but gradually and systematically, it has been incorporated into the routine teaching and learning process of many higher education institutes including universities.

According to the records, the development and implementation of e-learning facilities are accepted undoubtedly as a beneficial and convenient method to facilitate delivery and accessibility of resources to anybody from anywhere at any time over the globe. Therefore, during the past two or three decades, with the aim of equipping and preparing the students, as well as the institution for future participation in virtual education, the majority of the world-leading higher education institutions around the globe have already

introduced e-learning into their traditional class-room based course delivery as a fundamental part of the student learning experience. Presently millions of students are using a wide array of elements of e-learning tools in their higher education programs.

According to 2013 statistics, it is reported that 6.7 million students which is about 32% of all college students were engaged in at least one online course and which would be increased considerably by now. In the analysis using 2820 leading higher education institutes engaged in e-learning, it was pointed out, that over 67% of the chief academic officers of said institutes stressed online learning as the option for their future way forward and most interestingly, 77% commented online learning as good as or even better than the traditional classroom learning.[2]

E-learning; 'Pros' and 'Cons'

E-learning has its' capacity and potential to deliver different courses in a cheap and convenient way, to meet the ever increasing demand for education, especially to the groups with resource limitations and or having constraints of accessibility and also to marginalized groups in rural or remote areas. In addition to the above, e-learning is beneficial especially for students living home-away, or with disabilities and also for the students who have already engaged in full-time work or looking for time-shift rather than space-shift.

However, higher dropout rates are one of the major disadvantages in e-learning, which is mainly occurred due to the poor interaction between the learner and the teacher due to the spatial distance, the inherent problem in the process. This makes difficulties in easy and effective communication between them, thus affecting the persistency and motivation followed by less student engagement in e-learning, which ultimately ended up with drop-outs. In addition to that, there is a growing concern among educationists about the equity in availability and the accessibility of appropriate technology to students to engage in the teaching and learning process. Such a situation may create a considerable amount of disparity among the learners which adversely affects the real learning engagement expected in the e-learning process.[3]

E-learning, as for any other tool, also has its 'Pros' and 'Cons'. In addition to the previously described advantages of e-learning, 'Pros' includes availability and access to integrated teaching/learning materials through-out, student-oriented learning, and teaching, spatial and temporal flexibility, higher interactions, self-assessment tests, reduced number of classroom hours, easy, fast and continuous accessibility to global resources and materials (global teachers/ learners), *etc*.

On the other hand, the additional time and the non-trivial skills required to prepare education materials, less social contacts, technical

problems associated with the system, need for strong self-discipline and motivation, *etc*. have been identified as 'Cons'. Some of the above described 'Pros' and 'Cons' are expressed and briefed in another way by Anderson (2004)[4],

> "*First and primarily, an excellent e-teacher is an excellent teacher. They like dealing with learners virtually; they have sufficient knowledge of their subject domain; they can convey enthusiasm both for the subject and for their task as a learning motivator; and they are equipped with a pedagogical understanding of the learning process, and have a set of learning activities at their disposal by which to orchestrate, motivate and assess effective learning*".

E-learning, Student Engagement, and Experience

E-learning is an extensively used tool in the majority of higher education institutes, as an integral part of the present-day teaching/ learning process, it is now considered as a fundamental part of the student learning experience. Student engagement is identified as one of the key factors which impose a direct impact on student learning, retention, and persistence.

> *"Learning begins with student engagement"*

According to the research finding, it is reported that different profiles of student that includes adult learners, self-directed students, students from rural areas, students with disabilities, employed students, military personnel, students with low as well as very high socio-economic background, *etc*. have done well through e-learning. The reason behind the success was their high level of engagement.

There are plenty of strategies that are used effectively to improve student engagement in learning activities. In order to be successful in e-learning, appropriate student engagement strategies and relevant tools should be chosen carefully and adopted accordingly. Basically, e-learning facilitates learners with the better prospects to actively but leisurely engage in learning activities at any time from anywhere, providing them an excellent opportunity to reach a high level of learning achievement and higher-order thinking abilities which are considered as positive learning outcomes.

As in other learning/ teaching processes, in e-learning three types of student engagement could be seen namely, behavioural, emotional, and cognitive. In behavioural engagement, students behave but do not act-out whereas in emotional engagement students themselves feel as a part of the class/ school and are always very alert on their studies. In contrast,

cognitively engaged students are always eager to learn, curious, questioning, and think deeply of subject matters.

Online Activities to Enhance Student Engagement and Experience in E-Learning Environment

In order to make e-learning effective and advantageous, it is a pre-requisite to pay close attention to ensure that students don't feel that they are disconnected from the classroom. This is very critical with respect to student engagement due to the spatial distance between the teacher and the student in e-learning. Therefore, at the first instance, it is a collective responsibility of the institution; *i.e.* education and digital technology support arms as well as the administrative and management collaborative to make students connected and engaged in e-learning activities which also urge the instructor's active and continuous involvement.

In addition, to enhance the student engagement, certain activities which include provoking conversations and challenging students, encouraging social media usage, clear instruction on how to and when to get in touch, use of automation to monitor progress and to communicate with students, introducing rewards/ awards/ praising, *etc.* could be effectively introduced to the e-learning platform. Use of discussion boards, forums and wikis in e-learning could be adopted to develop and improvement of skills in team working whereas game-based learning and collaborative activities could also be beneficial.

Planning and Management of Components of E-learning System

In addition to its contents, tools, facilities, and resources, etc. one of the most critical factors that should be considered in planning, implementing, and managing an e-learning system is the learner perception.

Even though it is a well-deserved fact that e-learning can improve the quality of the teaching and learning process, it will never come true, if it is structured in a functionally and pedagogically meaningful manner. For the development, implementation, and subsequent management of an effective and efficient e-learning intervention, it is fundamental to ensure the integration of appropriate support arms as well as the proper interaction between them. These support arms include the educational support arm (*e.g.* educational programs for digital technology-DT use, content development, empowerment/ upgrading/ updating digital literacy of teachers thorough DT trainings, *etc.*), the DT support arm (maintenance, administration, and upgrading of the virtual learning environment -VLE, access to DT tools, help-desk, *etc.*) and also the teacher/ student support arm.

Since, it is a system in which several different counterparts and interfaces are working together in the same platform virtually, to achieve a

common goal, proper and timely intervention of the above components in managing, maintaining, administrating, upgrading, and evaluating is utterly important to achieve the set goals in any e-learning system. Therefore, it is a fact that the full functionality of an e-learning platform could only be achieved by the full support and engagement of the above counterparts, not only the inculcation of sophisticated DT itself to the process since the technology itself can never be a good teacher.

E-Teaching in Higher Education

E-teaching is one of the essential, key components which plays a fundamental role in any e-learning process which should therefore give serious attention. Even though both the learner and the teacher are equally important components in learning, generally, all most all the teaching and learning processes are student-centered. Therefore, in designing and in the implementation of e-learning framework in the higher education system, generally, the concern is mainly focused on learners rather than on the teachers.

Even though the role of the teacher is crucial and enormous in any online platform, it is a concern and in an argument that whether the involvement and the weightage given to the 'e-teacher' in planning and implementation of the e-learning platform is adequate. It is also worthwhile to note that the role of an online teacher is intensely different from that of a traditional classroom teacher, where an online platform necessitates the teachers to be equipped with sufficient digital literacy.

It is quite clear that in near future, e-learning would dominate the entire teaching-learning process, where digitally confident academics is a must to develop and introduce new e-learning applications and tools to further enhancement of student engagement and experience in education. On the other hand, this clearly reflects the importance of a well-designed periodical training facility to upgrade the digital literacy of academics.

Measuring Students' Engagement in e-learning

Noting the applicability and usefulness of e-learning in distance education globally, it is clear that e-learning is an important tool for supporting or even replacing traditional teaching methods, while adopting stringent and active involvement in maintaining an adequate quality of education. Therefore, in planning and implementation of blended learning using e-learning, as a supplemental tool for teaching and learning in the traditional classroom, it is of paramount importance to constant monitoring and assessing the quality and also the satisfaction of the learner which are crucial for the success, feasibility and the viability of e-learning system.

In order to facilitate that task, identification or creation of indicators to assess, measure, quality control and subsequent validation of them are

mandatory which will in-turn provides valuable feedback on each and every course, which is compulsory for upgrading the process.

Among the parameters, it is evident that monitoring and assessing student engagement are imperative since it is a component of the students' overall learning experience. As per the definition, student engagement is basically the level or extent to which a learner actively engaged with the course, and also with the other learners assigned to the course and the teachers. It directly reflects and correlates with the degree of students' connection to the learning components of the course therefore, considered as an effective measurement of e-learning.

Even though its importance and impact on fostering student learning, promoting student retention, enhancing quality assurance, and impacting student persistence is fully realised, accurate assessment of student engagement in different levels of e-learning is still not fully feasible. As highlighted by Bowen[5];

> "An explicit consensus about what we are actually mean by engagement or why it is important is lacking"[5]

Deficiencies in providing a unified definition to define the scope, intent, and parameters of engagement are prominent. Therefore, in any attempt on effective assessment or measurement of student engagement and its influence on learning experience, first, it is essential to set their own definition on the scope of engagement matching to their unique setup and then to select assessment metrics correspondence to set definition.

According to the literature Rubrics for Assessing Interactive Qualities of Distance Courses (RAIQDC), Classroom Survey of Student Engagement (CLASSE) and Student Course Engagement (SCE) were adopted to measure student engagement. Most methods apply for measuring student engagement have been developed targeting conventional learning environments. In the Engagement versus Disaffection with Learning (EvsD) scale method, behavioural and emotional factors are employed to measure student engagement and disaffection whereas four factors namely academic challenges, learning with peers, interaction with school institutions, and supportive learning environments are considered in the National Survey of Student Engagement (NSSE) measures. In contrast, emotional and cognitive factors are the base for the Student Engagement Instrument (SEI) measures, whereas a cognitive strategy is the base for the Motivated Strategies for Learning Questionnaire (MSLQ).[6]

However, the application of these tools to measure student engagement in e-learning is limited as the characteristics of engagement in the e-learning environment, is considerably different from the face-to-face conventional learning environment. Presently, in such an endeavour, the

measurement called Online Student Engagement Scale (OSE) is identified and widely applied to measure student engagement.

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[1] Górska, D. (2016). E-learning in Higher Education. *The Person and the Challenges*, *6*(2), 35-43.

[2] Dixson, M. D. (2015). Measuring Student Engagement in the Online Course: The Online Student Engagement Scale (OSE). *Online Learning*, *19*(*4*), 143-157.

[3] Guri-Rosenblit, S. (2018). E-Teaching in Higher Education: An Essential Prerequisite for E-Learning. *Journal of New Approaches in Educational Research, 7(2),* 93-97.

[4] Anderson, T. (2004). Toward a theory of online learning. In Anderson, T. & Elloumi, F. (Eds.). *Theory and practice of online learning* (2nd ed.). Athabasca, Canada: Athabasca University. Retrieved from http://cde.athabascau.ca/online_book/index.html

[5] Bowen, S. (2005). Engaged learning: Are we all on the same page? *Peer Review*, *7*(*2*), 4-7.

[6] Mandernach, B. J. (2015). Assessment of Student Engagement in Higher Education: A Synthesis of Literature and Assessment Tools. *International Journal of Learning, Teaching and Educational Research, 12*(*2*), 1-14.

CHAPTER 13

Enhancing Positive Student Engagement in Higher Education

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Introduction

One of the challenges teachers face in higher education is getting students involved. Teaching desires not only a facility of the course material but an equally important effective teaching methods that are needed to engage their students. The roles of the teachers are to help students interact with content and create their knowledge. The study shows that effective teaching methods can stimulate student engagement and Involvement, and that is also associated with positive learning outcomes. In numerous researchers found that student participation is involving several dimensions. But in most definitions that describe as behavioral and emotional elements. Also, some others have mentioned student involvement as a factor of interaction with the teacher and interpersonal elements. Researchers found an indication of four main dimensions of student involvement such as general learning skills, emotional participation in teaching materials, interaction, and performance with teachers and peers. It is characterized by student participation as either asking questions or actively participating in collaboration with other students.

Student engagement can be thought of as just another word for student involvement. Its predecessor was certainly based on concerns that increased engagement. Engagement is also prominent in the literature on how to improve the usefulness of teaching and learning. Moreover, a discussion was made on active student feedback approaches that facilitate to improve the student representation within the institution. However, engagement is not only about introducing methods to increase student participation but also activities and actions. It is similarly the process of internalizing the meaning of activity and shows the importance of those activities to students.

Student Engagement in Education

Primarily student engagement consists of three main components, and they are:

Behavioral Engagement

It is commonly displayed by actions that are associated with students' behavior towards the learning process in which those actions were defined by the organization such as attending lectures, meeting deadlines, participating in extracurricular activities, etc.

Emotional engagement

Simply, this is how students emotionally engage with real satisfaction in college life. This is involved with positive or negative attitudes and by showing real interest in what is happening in college life.

Cognitive Engagement

This is revealed the amount of effect by students who want to be challenged or are actively seeking such challenges. This may be indicated by further exploration of the topic or activity for more conversation with the instructor or other staff.

At any moment in a specific period of time, students can be proactive on any combination of these three aspects. Similarly, teachers should be aware that they are destructively involved in all those aspects of any of these. Furthermore, they may be behaviorally, emotionally, and/or cognitively disengaged at several arguments in their college life.

Student Engagement for Academic Success

Student engagement brings several benefits, and in the final analysis, it gives academic success.

At present many universities offer a number of opportunities to students for their personal as well as social developments and not only that those are accommodating for their intellectual and academic development as well. Optimistic engagement with those opportunities helps for student retaining and eventually student education and it will make a significant contribution to the success.

Development of Positive Engagement

Since the university began to identify the relationship between engagement and student success, it is changing from the outmoded conceptualization of student service to the support of something that facilitates the engagement. In the creation of this transition, the universities have to be recognized of their own capacity such that a wide range of active student engagement (behavioral, emotional, and cognitive) can only be achieved through delivering academic and social services with the corporation of students themselves. Following key elements are very essential to build up this partnership approach,

- Strong administration through traditional institutional boundaries
- Different styles to cooperate with students and academic staff

- Development of capacity and skills of the staff to identify proactive approaches

Approaches to Promote Student Engagement in Higher Education[1]

Academics define the student engagement as a multidimensional phenomenon. Many definitions indicate that it consists of both behavioral and emotional elements. Moreover, some researchers define student engagement as an element of interpersonal affairs, the interaction between students and teachers was set up to be a significant part of the learning experience.

Most definitions for student engagement are broad enough to include more explicit explanations. Based on those definitions and the creative combination of the researcher's ideas this article describes some approaches to stimulate student engagement.

Develop Student's Self-belief

It is essential for students to believe in themselves as learners. They need to believe that, they can learn themselves, in addition to their failures. Throughout the learning process, can enhance the confidence and commitment of the students by allowing some control to themselves.

Encourage Students to Work Autonomous and a Sense that they are Capable of Their Own Goals

Students are happier to be motivated, engaged, and to be successful when the institution offers them some opportunity to learn autonomously and cooperatively with others. The main focus here is to develop the essential motives that facilitate freedom which leads to positive engagement.

Identify, that Education and Teachers as the Center of Engagement

As a center of engagement, many studies place the teacher. When teachers are observed as approachable for students and confident of the subject, not only that if they are sensitive towards students, then students are faithful to work harder. Moreover, students learn more from the sessions and become active to express their views.

Build the Live, Collaborative Learning Environment for Students

To get the attraction of the learners, many findings confirm that it is essential and important to introduce active group learning approaches, have good peer relationships, and in addition social skills.

Build Challenging and Prosperous, Educational Background to Develop the Student's Academic Abilities

To get the interaction of students, that is not more productive with the use of simple learning activities and the general assignment process as

engaging activities. Students are engaged, when they are questioning, predicting, and evaluating and build networks between concepts. Hence teachers' essential to make rich educational involvement that challenges student's concepts and extends them as much as possible.

Ensure that the Culture of the Institution Welcomes Students of Diverse Backgrounds

Students need to feel recognized and affirmed by the environment, in order to participate actively.

Invest in Certain Support Services

Occasionally, students appear not to use support services such as learning and advice centers, but many survey results confirm the significance of those services. Those services are supposed to be a part of institutional culture and students need to engage as they value and support their determination to learn.

Familiarizing with Fluctuating Expectations of Students

Educational institutions should never be gratified with ways to encourage student participation. Institutional practices need to be adjusted as students get change. Not only just promoting the engagement, but also maintaining the same is needed.

Allow Students to Turn out to be Active Citizens

It is good to have a democratically important concept of participation that goes beyond strategy, skill, and action. Engagement is really important to build interactive and participatory relations, towards academic success as well as success as an active citizen.

Most of our higher education institutes need to retain students and increase their success rate. But they face increasing financial challenges and more international competition for students. Therefore, to lead the university, they need to give much priority to improve and introduce many student engagement strategies.

Improve Student Engagement with Employability

Recently, the number of students is increased and there has simultaneous competition among graduate recruitment, not only that, current economic and political conditions, encourage universities to focus on incorporating employment aptitude into their degree programs. Employers often complain that graduates do not have the kind of skills and experience they desire. Most of the employers proposed to improve graduate employability skills and universities need to give priority to that point. Some

researchers identify the gaps between employer expectations and students' sensitivity to skills.

Students have so many talents and skills. But the problem is that they have difficulty to reveal those. Almost every student has not presented their skills in curriculum vitae, application form, and interviews. Consequently, they need considerable guidance and inspiration to identify those skills and talents.

It is essential to develop different assessment techniques that are aimed at providing students with the opportunity to recognize employer requirements and to practice and demonstrate relevant employment-related abilities.

The students who have self-confidence and have a clear idea about the process they experienced during higher education, moreover knowledge they gained through the process, should be more effective students and researchers.

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[1] Zepke, N., and Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education, 11(3)*, 167-177.

CHAPTER 14

Adopting Innovative Teaching and Learning Methodologies to Stimulate Student Engagement in Higher Education

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Introduction

Stimulating Student Engagement in the perspective of teaching and learning is presently a matter of concern raised by the Higher Educational Institutes. Researchers found that students are more engaged when the instruction increases student-teacher interaction, stimulates cooperation among students, encourages active learning, provides timely feedback, requires students to invest time in their assignments, establishes high expectations, and respects their various abilities. Therefore, when incorporating these principles teaching and learning practices play a vital role in student engagement. Many researchers believed that to improve the quality of teaching and learning, greater consideration must be given to teaching and learning practice.

According to different researches on education, various methods of teaching have been discussed. In general, these teaching methods can be classified as traditional and innovative. Traditional methods are more teacher-centered, where students obtain knowledge from the teacher with lesser involvement. In some faculties with a large number of students use traditional methodologies like lecturing for teaching, which results in poor interaction between students and lecturers. Consequently, that leads the students to lose their interest and understanding of the subject. In contrast, the use of innovative methods also known as modern ways of teaching is more student-centered which improves the interest and the involvement of students. Active participation of students in different activities helps the accomplishment of learning objectives.

The rapid growth of technology demands changes in every field and has made many innovations in the field of teaching where teacher-centered traditional methodologies are not adequate for current students. As a result, it is essential to adopt new effective ways of teaching that are necessary to stimulate student engagement. Most of the researchers found that involving

creativity in teachings foster students' creative potential. Therefore, the Innovative methods of teaching can be viewed as "an intentional series of student-focused actions an invested educator can take to stimulate students' ability to meaningfully and creatively engage with the material in order to stimulate interest and advance their knowledge"[1].

Since a large number of innovative teaching and learning methodologies are available to enhance learner engagement, a few but more important are explained here.

Flipped Classroom

The flipped classroom is a form of blended learning that converses the traditional learning environment by providing pedagogical content often online outside of the classroom. Therefore, this allows students to read lecture material and other course literature over a video at home prior to class and involve in discussing, analyzing, and answering questions in lecture with the guidance of the lecturer. Several studies report that students in the flipped classroom are actively engaged than the students in traditional courses.

How to implement a flipped classroom?

According to Jeff Dunn[2] following six steps can be used for implementing a flipped classroom.

- "Plan
  Figure out which lesson, in particular, you want to flip. Outline the key learning outcomes and a lesson plan.
- Record
  Instead of teaching this lesson in-person, make a video and screencast work. Make sure it contains all the key elements you'd mention in the classroom. Researchers pointed out that not to make a video just for the sake of making one. Only do so when you feel these are appropriate and necessary. It all depends on the educational goal of your lesson. If making videos better facilitate your instructional goal, then go ahead.
- Share
  Send the video to your students. Make it engaging and clear. Explain that the video's content will be fully discussed in class.
- Change
  Now that your students have viewed your lesson, they're prepared to actually go more in-depth than ever before.
- Group
  An effective way to discuss the topic is to separate into groups where students are given a task to perform. Write a poem, a play, make a video, etc.

- Regroup
  Get the class back together to share the individual group's work with everyone. Ask questions, dive deeper than ever before.

After the six steps, Review, Revise, and Repeat!
Some other strategies that can be used in in-class activities include:

- ✓ Active learning. Allow students to apply concepts in the class where they can ask peers or instructors for feedback and clarification.
- ✓ Peer instruction. Students can teach each other by explaining concepts or working on small problems.
- ✓ Collaborative learning. Collaborative learning activities could increase student engagement, enhance student understanding, and promote collective intelligence.
- ✓ Problem-based learning. Class time can be spent working on problems that can last for the duration of a semester.
- ✓ Discussions or debate. Allow students to articulate their thoughts on the spot and to develop their arguments in support of their opinions or claims."

Many researchers have found the following advantages of this inverted classrooms: Flipped classrooms allow students with greater flexibility and facilitate learning in their self-pace, it motivates students to actively involve with lecture material, helps to use the actual class time in a more effective way, develops innovative and active learning activities, Lecturers get extended opportunities to engage with and to evaluate students' learning, and students will take responsibility of their learning. So these make flipped classrooms so compelling for many lecturers as it helps them to improve the classroom experience in numerous ways.

Gamification

Another innovative teaching technique that lecturers can adopt is to reward the hard work of the students, which tends to increased motivation of the students to actively engage in the learning process. This can be done by using the gamification approach. Gamification means the use of game procedures and elements in the learning environment. According to Kapp[3] gamification is "using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems."

The implementation of gamification in the learning process required an in-depth analysis of existing conditions which consisted of the following steps.

- Identification of Learners' Attributes

To measure the suitability of a new technique when implementing the learning process it is vital to define students' profiles. Furthermore, it is

essential for lecturers to have a good idea about the skills that are required by the students to achieve the aims and whether they required some exceptional skills to accomplish those tasks. If tasks are very easy or hard to achieve, then there is a likelihood of discouragement of students and will lead to a negative outcome.

- Definition of Learning Objectives

Every education program needs to have some learning objectives, and that learning objectives need to be precise and clearly defined. Achievement of the learning objectives is the purpose of education. These learning objectives decide what activities to be incorporated into the learning process and a variety of suitable game procedures and techniques to be used to achieve those learning objectives.

- Design Educational Content and Activities for Gamification.

When designing the educational content, it should be interactive and include multimedia elements. "The training activities should be developed tailored to the learning objectives and allow[4]:

- ✓ Multiple performances – the learning activities need to be designed so that students can repeat them in case of an unsuccessful attempt. It is vital to create conditions and opportunities to achieve the ultimate goal. As a result of repetitions, students will improve their skills.
- ✓ Feasibility – the learning activities should be achievable. They have to be tailored and adapted to students' potential and skill levels.
- ✓ Increasing difficulty level – each subsequent task is expected to be more complex, requiring more effort from students and corresponding to their newly acquired knowledge and skills.
- ✓ Multiple paths – in order to develop diverse skills in learners, they need to be able to reach the objectives by various paths. This allows students to build their own strategies, which is one of the key characteristics of active learning".

- Inclusion of Game Components and Mechanisms

The fundamental feature of gamification is the insertion of tasks that students have to perform. According to the predetermined learning objectives the game mechanics will be included in the training. And that game mechanics can be classified as self-elements and social elements.

Self-elements can be points, trophies, badges, levels, or time restrictions. These components require independent work by students and to concentrate on competing with themselves and identifying self-achievement.

Social-elements place the students in a society with other students and their progress and accomplishments are made public and visible which is interactive competition in nature, like leaderboards.

The modern Information & communication technology environment provides a favorable platform for the implementation of gamification. Since there are many tools for gamification, Learning Management Systems (LMS) is considered to be the most suitable tool for gamification as the majority of educational institutions use LMS in their learning process and it consisted of many tools for tracking students' results and their progress. Many researchers found that the use of game elements in the learning process improves the students' ability to learn new skills, but to obtain the positive results from the gamification approach, the understanding of the context that surrounds the learning program, the learning objectives, and adding suitable game elements are crucial.

Design Thinking (Case Study)

From design thinking, the lecturers expose the students to real-life problems or allow the students to learn by analyzing case studies and using techniques like brainstorming and group interaction. It allows the students to obtain knowledge and enhance their critical thinking ability. The relevant case to be selected is based on the learning outcome. Many studies have found that the design thinking approach or problem-based learning results in momentous improvements in students' critical thinking ability and active involvement in their learning process. Korkmaz[5] in his study on graduates witnessed that when students are exposed to these types of case-based learning methods, assignments, simulation activities, and classroom discussions will lead to significant improvements in delivery parameters that tend to increase their team characteristics. Many studies found that the conceptual understanding of the students was considerably higher when they learned from the design thinking approach or problem-based learning comparing with traditional lectures.

Simulation and Role Playing

Simulation involves participating in a real learning experience that closely looks like an actual setting. One way of replicating these actual settings may be the use of role-play, which allows the learner to become occupied in learning by doing something. The lecturer needs to develop strong ground rules to get the involvement of student and it must be stressed out that it is an opportunity for the students to involve in the learning process as it increases their sense of belonging, motivation, and achievement

To adopt this approach lecturer must have a clear idea regarding the learning outcomes of the lesson and for certain simulations and role-playing, the students' preparation may be required. Evaluation of the students' understanding can be done using lecturer assessment, peer, and self-

assessments. The feedbacks of the lecturer and peers allow the students to improve their social skills, problem-solving skills, and the other areas of the learning process. As it requires no any special tool or technology it can be considered as a very flexible teaching technique. However, with the advancement of technology, nowadays smartphones and video cameras can be used to record and store the traditional face-to-face role-play for later reference, which is not possible when the exercise has not been recorded, hence technology provides some momentous opportunities, for using this approach as a learning activity.

Project Based Learning (PBL)

Many researchers have confirmed that project based learning is an effective and interactive way of learning which permits students to obtain new knowledge and skills through the development of projects. By concentrating on a project, lecturers can place the students on a path that develops their knowledge and skills, which will be essential in their future when solving real-life problems. Allowing the students to get into teams and started on the project. Students should be given the opportunity to ask questions, investigate, work together, provide feedback to each other, and to find out the most suitable way to present their points clear, students can show off their final work to the audience. This enables to improve students' critical thinking, communication, problem-solving, self-management, and teamwork. Unlike conventional teaching and learning methodologies project based learning was not about memorization, it allows students to engage in-depth learning in subject matters which is long-lasting.

Portfolio Development

Portfolio Development is known as a powerful learning and assessment technique, which has the ability to capture students' learning in action. According to Davis and Ponnamperuma[6] Portfolio Development describes as "a collection of work of a learner, which provides evidence of achievement of knowledge, skills, attitudes, understanding and professional development through a process of self-reflection over a period of time". It could be in printed or electronic versions that include the collection of evidence of work carried out by the student. This encourages students to improve their critical thinking ability and to engage in active learning as it guides the students to identify their learning needs and is motivated to engage in self-learning. A recent study on educational effects of portfolios on undergraduate student learning concluded that improvement in knowledge and understanding, increased self-awareness and engagement in reflection and enhanced student-teacher interactions are the main educational benefits of this technique[7]. So to introduce portfolio-based learning as lifelong learning, it is needed to have an excellent induction program for both students and staff.

Conclusion

Several researchers have explained the need and importance of adopting innovative methods of teaching and learning to enhance the active participation of students. The various innovative teaching and learning methodologies that are described above creates a collaborative and positive learning environment for students that will help strengthen the relationship between Lecturer and Student, which in turn develops a sense of responsibility in students of their education. However, it is a challenge to practice these methodologies in every discipline as undoubtedly each discipline has its own challenges and opportunities when adopting innovative teaching. So the selection of the most appropriate innovative teaching technique according to the course learning objectives benefits both lecturer and student. To conclude, the researchers believe that the use of these types of innovative and effective methods of teaching and learning can provide better education to students while enhancing their active involvement in learning.

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[1] Bildfell, A. (2015, September 01). What is Innovative Teaching and How Can We Implement it into Our Classrooms at the Post-Secondary Level? Retrieved March 2017, from https://carleton.ca/tasupport/2015/what-is-innovativeteaching-and-how-can-we-implement-it-into-ourclassrooms-at the-post-secondary-level

[2] Dunn, J. (2014). The 6-step guide to flipping your classroom. Retrieved from http://dailygenius.com/flipped

[3] Kapp, K.M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. San Francisco, CA: Pfeiffer.

[4] Simões, J., Redondo, R.D., & Vilas, A.F. (2013). A social gamification framework for a K-6 learning platform. *Computers in Human Behavior, 29*(2), 345-353.

[5] Korkmaz, S. Case-Based and Collaborative-Learning Techniques to Teach Delivery of Sustainable Buildings. *Journal of Professional Issues in Engineering Education & Practice, 138*(2). 139–144.

[6] Davis, M. H., & Ponnamperuma, G. G. (2009). Portfolios, projects and dissertations. In J. A. Dent, & R. M. Harden, *A practical guide for medical teachers* (pp. 349-356). London: Elsevier Churchill Livingston.

[7] Buckley, S., Coleman, J., Davison, I., Khan, K. S., Zamora, J., Malick, S., ... & Sayers, J. (2009). The educational effects of portfolios on undergraduate student learning: A Best Evidence Medical Education (BEME) systematic review. BEME Guide No. 11. *Medical teacher*, *31*(4), 282-298.

CHAPTER 15

Utilizing Distance Learning to Enhance Learner Engagement and Experience in Higher Education

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Introduction

The current context of higher education has drastically changed due to various developments taking place in the world from time to time. Such developments consist of political, economic, social, and technological (PEST) factors. Among those factors, technology has created a significant impact on the way that educational programs are being conducted in universities and higher educational institutes. Therefore, this article will focus on one such development created as a result of it; known as distance learning.

Distance Learning

There is no one specific definition for the concept of distance learning. However, we can identify some of the definitions introduced by various scholars in the field of education management.

Distance learning covers various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises, but which nevertheless benefit from the planning, guidance, and tuition of a tutorial organization[1]. Therefore, it makes an implication that the concept of distance learning will ensure the delivery of knowledge to students even without having to physically meet them.

Furthermore, it can be identified as having the potential to promote effective learning in that it is able to engage students fully to the benefit of both their intellectual and emotional development[2]. Thereby, it gives a certain assurance that distance learning is also capable of enhancing learner engagement and experience in higher education.

Theories on Distance Learning

Theories relating to distance learning mainly focus on the process of teaching and learning from the point of view of the learner; whereby the

learner is given prominence during the design, development, delivery, evaluation, and feedback process of educational programs. Those programs vary from academic to professional. Therefore, some of the theories introduced in this article are as follows;

Guided Didactic Conversation

The theory of guided didactic conversation as proposed by Holmberg[3] emphasizes the importance of personal communication between the teacher and the learner; whereby the learner understands the teacher and remembers the guidance given by him/ her. Thus, it creates a feeling of personal relation which is an important aspect of enhancing learner engagement.

Transactional Distance

The theory of transactional distance (TD) by Moore[4] explains the distance between the teacher and the learner does not necessarily mean a geographical distance, however a psychological distance which is influenced by three (03) variables such as dialogue, structure, and autonomy.

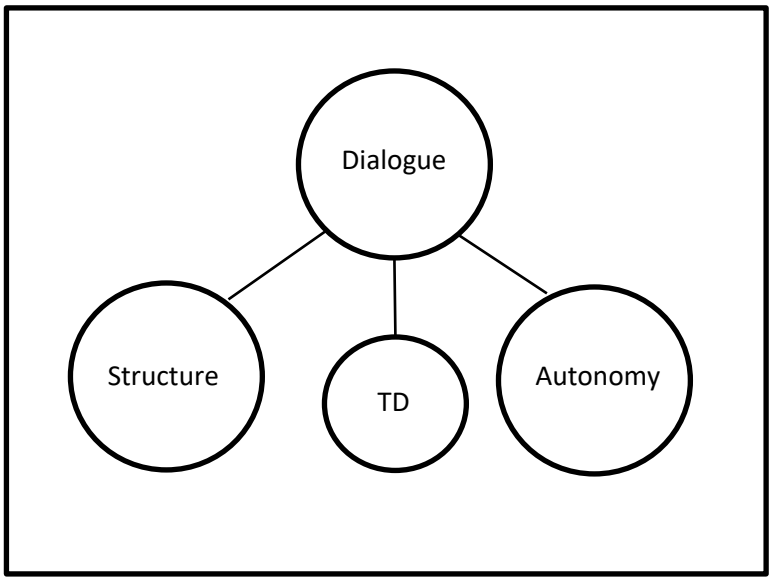

Figure 1: Three (03) Variables of Transactional Distance

Dialogue refers to the level of response between the teacher and the learner. Unlike traditional learning methods where physical interaction is involved, distance learning requires electronic means of generating a dialogue between the teacher and the student.

Structure determines the extent to which how the educational programs are designed to address the needs of the learner. Determining the

purpose of the programs, setting intended learning outcomes, determining the content and its delivery plan and setting the evaluation criteria is done in accordance with the requirements of the learner.

Autonomy provides the learner to determine what programs to follow, how to follow, and how much to follow. This implies the learner setting his/her own goals in learning and ensuring independence in decision making.

The community of Inquiry (COI) Model

This is a framework (Figure 2) developed based on the idea that knowledge evolves and develops over time as it is socially constructed and validated. This implies the importance of learning communities, whereby communication among the learners is also vital; while maintaining personal communication between the learner and the teacher.

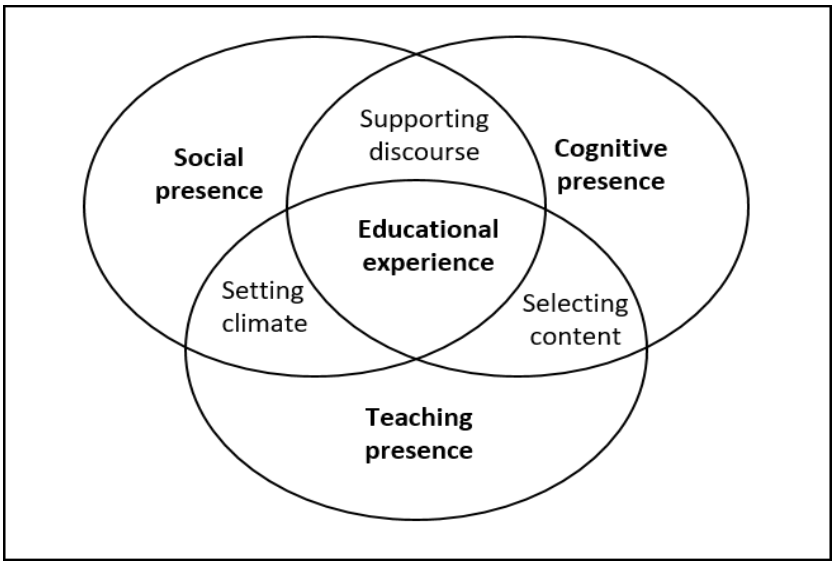

Figure 2: Community of Inquiry (COI) Model

In terms of explaining the dynamics of learning communities there are three (03) constructs as proposed by Garrison[5]; namely social presence, cognitive presence, and teaching presence.

Social presence emphasizes that effective communication, open communication, and group cohesion enable a person to introduce himself/ herself and to develop personal and purposeful relationships.

Cognitive presence explains the importance of collaboration and reflection in a learning community that ensures understanding among the learners. Furthermore, they are encouraged to explore, construct, and resolve any issues among themselves.

Teaching presence focuses on the delivery of learning outcomes with the objective of ensuring social and cognitive presence. Thereby, facilitating knowledge enhancement over the years among the learning communities.

As a result of these theories, it is quite evident that distance learning is a non-traditional way of education whereby the learner is given the opportunity to determine their needs of learning and the teacher is there to guide, ensure and enhance learner engagement through various models of distance learning.

Models of Distance Learning

There are various models in which distance learning can be conducted. The traditional way of conducting distance learning is referred to as the correspondence model, whereby prominence is given for printed material and the student is encouraged to communicate with the teacher through postal media. However, with the development of technology this model was replaced by audio-based models, televisual models, computer-based multimedia models, web-based models, and mobile models[6].

Audio Based Models

These include radio broadcast where teachers provide educational content to radio stations or conduct sessions live and transmit on air by the radio station. Furthermore, audio conferencing is also conducted as a part of audio-based models; whereby the teacher initiates a telephone conversation with students and discussions on the particular subject matter are conducted.

Televisual Models

These include using television (TV), as well as visual modes of delivering educational content. TV channels invite teachers to conduct their sessions both live as well as recorded for later transmission. Students are pre-informed on the date, time, and content. Thereby, the respective audience is attracted.

Furthermore, teachers conduct video conferencing sessions for students as part of the most popular visual mode of delivering educational content. This ensures much engagement from the student compared to audio conferencing since the teacher is able to look at the face of each and every student while delivering the content; although they are not physically present.

Computer-Based Multimedia Models

Compact Disc Read Only Memories (CD-ROMs), Video Compact Discs (VCDs), Digital Versatile Discs (DVDs), intelligent tutoring systems, and digital learning games can be identified as part of the computer-based multimedia models.

CDs, VCDs, and DVDs enable teachers to store and distribute their content, whereby students can use them as reference materials repeatedly. Intelligent tutoring systems involve artificial intelligence, whereby expectations of the students are traced using an algorithm called 'model tracing' and catered to their learning needs accordingly. Digital learning games create an experiential learning environment for the student in which certain tasks such as quizzes, puzzles, problem-solving exercises are assigned in order to enhance learner engagement.

Web-Based Models

Also identified as online learning or e-learning models which are developed with the introduction of the internet and the World Wide Web (WWW). Online courses, webcasts, webinars, and virtual classes can be stated as few examples in this regard. The access to these resources can be subscription-based or open-source depending on the objectives of the program. Furthermore, it should be noted that web-based models have become the latest trend in the higher education sector; whereby the learner engagement and experience can be enhanced even without having to physically engage with the learner.

Mobile Models

Also referred to as mobile learning or m-learning models where students access to learning materials through the mobile phone. Nowadays, with the introduction of smartphone technology students find it much convenient to access the learning materials through mobile-based applications and refer to them even while engaging in some other work such as travelling, cooking, and cleaning.

Having identified various models of distance learning it is very much important to understand how these models enhance learner engagement and experience in higher education.

Enhance Learner Engagement and Experience in Higher Education

Although, there are various models of distance learning only some are capable enough to enhance learner engagement and experience in higher education.

At present, the learners always look for the most convenient and the fastest solution for their education. This has become more popular among students who engage in part-time jobs while engaging in their studies. They prefer virtual presence through distance learning rather than physical presence at lectures, which they consider as an opportunity cost due to waste of time, cost, and effort. However, if the teacher is unable to enhance the learner engagement and experience, the learner will definitely move away from such initiatives. Therefore, in order to enhance learner engagement and experience, the teacher should first identify the models which are most

preferred by the learner. In the context of higher education, the particular lecturer should determine the most suitable model to deliver the course content to the student.

Through this article, the writer expresses a personal experience of him relating to the distance learning during the COVID-19 pandemic situation in 2020.

As a result of the pandemic situation, the higher education sector in Sri Lanka undergoes a significant change in its program delivery, whereby lecturers are to conduct academic sessions using distance learning models. Although web-based models such as Learning Management Systems (LMS) were in presence within the university system for quite a while, the learner engagement has not been a major issue due to the physical presence of the lecturer and the student for lecture sessions on a regular basis.

However, with the pandemic, the difficulties in social gatherings and requirements for social distancing have posed an urgent need for lecturers to ensure student engagement more than that was present prior to COVID-19.

As a solution, the university the writer serves has made improvements to the existing LMS by introducing new add-ons such as attach voice clips, upload video footages and host zoom meetings.

The learner feels that the lecturer is always close to him/ her although not physically present nearby. Rather than just uploading student handouts and PowerPoint presentations to LMS, the lecturer can utilize those add-ons to ensure the learner engagement and experience.

The writer himself utilizes the new feature of uploading a video footage along with the lecture handout. This enables the writer to brief and summarize the upload and the learner will also get a clear idea regarding the material uploaded.

Furthermore, the writer ensures that his own voice is embedded to the PowerPoint presentations uploaded. This enables the learner to feel that he/ she is already in the lecture room and the only difference being the lecturer is not physically present.

However, in order to fill the physical absence of the lecturer, zoom meetings can be hosted to discuss learner issues and encourage them to come up with suggestions for future improvements. Not only zoom meetings but also online lecture sessions can be conducted through zoom, whereby the lecturer is able to deliver the lecture in the same manner that he/ she had been delivering earlier at a lecture room or any physical location.

Limitations

Although, distance learning is utilized to enhance learner engagement and experience in higher education, it has its own limitations to both the learner as well as the teacher.

There will be a lack of supervision and guidance received by the learner compared to a traditional mode of learning such as through physical presence. Thereby, the learner will find it difficult to maintain discipline in accomplishing the tasks assigned due to excessive flexibility caused by lack of supervision and guidance by the teacher[7].

Lack of infrastructure facilities also acts as a barrier for distance education. Although the majority of learners have access to smartphones there can be exceptions as well. Furthermore, students who live in remote areas will find it difficult to obtain a stable internet connection which will also make it difficult to connect to online modes of distance learning.

Teachers who have got used to traditional ways of conducting lectures finding it difficult in distance learning which requires a certain level of practice and training to expedite. Thus, it becomes a limitation from a teacher's point of view.

Conclusion

Distance learning will be the way forward in the future world; not only in higher education but also in the entire education system. In terms of higher education, it is the duty of the individuals who are in higher education to promote this concept with the objective of enhancing learner engagement and experience.

The authorities will have to address the immediate issue of barriers to distance education. The main barrier being the infrastructure requirements. New entrants to universities should be given the access to a personal computer or device through which they can conduct their studies. Also, stable network coverage should be ensured throughout the country in order to expect uninterrupted connectivity.

Furthermore, lecturers should be given a certain level of induction and training relating to distance education in order to overcome the said barriers. It will also create a positive impression among them to utilize distance learning with the objective of enhancing learner engagement and experience in higher education.

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1 Holmberg, B. (1993). Key issues in distance education: an academic viewpoint.in Harry et al. (Ed.), *Distance education: New perspectives* (pp. 330-41). London: Routledge.

2 Lockwood, F. (Ed.) (1995). *Open and distance learning today*. London: Routledge

3 Holmberg, B. (1995). *Theory and practice of distance education*. New York: Routledge.

4 Moore, M. G. (2013). The theory of transactional distance. In M. G. Moore (Ed.), *Handbook of distance education* (3rd ed., pp. 66–85). New York: Routledge.

[5] Garrison, D. R. (2007). Online community of inquiry review: Social, cognitive, and teaching presence issues. *Journal of Asynchronous Learning Networks*, *11(1),* 61-72.

[6] Burns, M. (2011). *Distance education for teacher training: Modes, models, and methods*". Washington, DC: Education Development Center, Inc.

[7] de Oliveira, M. M. S., Penedo, A. S. T., & Pereira, V. S. (2018). Distance education: Advantages and disadvantages of the point of view of education and society. *Dialogia*, (29), 139-152.

CHAPTER 16

Impact of Learning Analytics for Student Engagement and Experience in Higher Education

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Processing Accumulated Data of Learners to Optimize Their Activity

Analyzing human activity and products by using data mining and business intelligence software is crucial nowadays for the survival of any organization. In higher education, a large data set is gradually accumulated about learners, their performances, and the learning environment. Since last decades, higher education institutes are beginning to realize how to exploit these data to understand their students. The United Kingdom has given some encouraging examples as discussed below. Therefore, the novel discipline of learning analytics is procuring a growing reputation within academic institutes and decision-makers.

There are various drives that the university can use to obtain learner information from rich data sources which are built-up within the institute. Organizing these data banks effectively is crucial, on the other hand, processing data brings a considerable cost for the institute. Therefore, institutes are searching for a multifunction economic data handling system. The worldwide motivation for learning analytics comes from the academic institutes with gradually overextended budget or those prioritize evidence-based expenditure. However, solid encouragements persist in organizing resources allocated to learning and teaching efficiently. Further for paid programmes, students will be able to see independently the evidence of utilizing their fee appropriately[1].

Learning analytics can identify students with their information in advance such as prior qualifications, educational progress, and whether student likely to continue or withdraw from the existing programme. Therefore, authority can personally mediate and advise students in advance and it helps such students to retain[2]. Utilizing these data, higher education institutes can maximize the performances of the undergraduates and thus improving the reputation among the public.

Learner analytics facilitates education in several directions. it can equip lecturers with information and the standard of the academic

programme, set of activities provided in time, teaching skills assessment process is implemented. On the other hand, lecturers can use analytics to monitor the performances of students of the ongoing semester through which it helps the tutor to familiarize with the effectiveness of the delivery, identifies students who struggle with a particular subject area. In some cases, analytics on student data subsequently enable the development of future academic programme for students or modifying existing educational content and process it in a more beneficial manner.

Learning Analytics is A Rapidly Developing Concept

Learning analytics was defined as; "measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs"[3]. Various academic professionals such as educational data handling experts and analytical modeling specialists can liaise simultaneously in a learning analytics platform. Campbell *et al.*, (2007)[4] pointed out that there are opportunities for 'academic analytics' to highlight several emerging challenges such as lower student retention rates in higher education.

With time, basic learning analytics appeared as an independent discipline 2010[5]. Now it has been observed by academic analytics and their main concern is to use for institutional development. The Society for Learning Analytics Research (SoLAR) was established and clarified a definition of learning analytics: There were some overlaps across promptly developing areas, however, it is necessary to differentiate learning analytics from educational data mining and academic analytics. Learning analytics is enhancing learning aspects, Educational data mining is obtaining information from academic-related data banks, whereas academic analytics focusses mainly on utilizing data for business promotion and administration purposes[4,6].

A wide range of academic disciplines such as education, psychology, sociology, philosophy, learning sciences, linguistics, statistics, intelligence, and computing machine learning / artificial science were influenced by learning analytics so far. Predominantly, researches on education and computer science are among these disciplines[7].

Successful Application of Learning Analytics

In the United Kingdom, learning analytics has been deployed by many academic institutes in different ways to achieve unique expectations. Sclater[8] has conducted a study which was commissioned by the Joint Information Systems Committee (JISC) in 2014 in the United Kingdom to analyze the improvements of learning analytics. This study revealed that early adopters had a desire to uplift different learning experiences of students such as enrich achievement while minimizing lower grades and repeats,

offering detailed feedback, and permitting students to become further reflective.

Some institutions have great concerns about students' enrollment for programmes and continuity of education, they have identified learning analytics as an effective tool to identify students in advance those who are at risk of dropout. To minimize early leavers, students were provided with clear information on their progress and become an important driver.

Further, according to the survey report, student satisfaction has been increased by 9% in two years in Manchester Metropolitan University. Learning analytics is also identified by many other institutes as a mode of efficient knowledge dissemination, particularly in the assessment and release result in time. It also builds a better understanding among teachers and learners. Some universities have given authority to their staff to provide actionable insights into student performance, those who work directly with learners to using analytics tools.

Trent University in Nottingham found that it was difficult to find the most vulnerable students by tutors in terms of supporting them. The main aim of their implementation of learning analytics was to facilitate on recognizing weak students in advance. Some universities have attempted to use analytics to identify students in various levels of achievement, poor performing student groups especially among different ethnic groups or genders, and provided additional support. With an evidence-based approach, The University of Derby has employed analytics to support students from Black & Minority Ethnic (BME). Furthermore, Trent University intended to get a detailed understanding system on certain minority those who were struggling while studying. However, some students do not show their characteristics, hence difficult to identify whether they have more difficulties with one subject than others, alternatively, this development was a highly personalized approach to the provision of student support which capable of identifying such students.

There were various examples for small scale initiatives of trying to analyze data of students and their learning activities by high profile institution level deployments and it seems to be unable to measure accurately, however, the curiosity of university officials appears to be growing rapidly on the potential of learning analytics for addressing strategic issues. A study conducted recently by Heads of e-Leaning Forum (HeLF) in the UK has found that the main interest in learning analytics of academic institutes was on both students' retention and improvement in learning engagement[9].

Another study revealed that approximately 50% of academic institutes have not implemented learning analytics. Further, the result has shown that the senior management had limited knowledge about the importance of learning analytics[10]. A commission was set out under Higher Education in Australia to investigate the transformative effect that data and

analytics can have on students in higher education institutions (HEIs), particularly, looking at how data can be used by institutions to improve the student experience of the university[11].

Learning Analytics to Predict Academic Success

Measuring student participation with the involvement of Virtual Learning Environment (VLE) / Lerner Management System (LMS) / Learner Experience Platform (LXP), and assessments submission, and other data can be utilized as a substitution for learning. Therefore, prospective learning achievement can be considered as one of the main concepts of prognostic learning analytics. Several reports have confirmed that those students who participate regularly are expected to perform well.

There are many examples for collecting ample amounts of data among universities but not utilized effectively; St. Louis University in Missouri discovered that there is a correlation between student access to learning content and grade book for the final grade. Hence the data could not be used to support learners[12]. Some of the reports in the Trent University Nottingham have proved that there is no correlation between the highest levels of student participation and the best results; perhaps weak students have engaged mostly in learning analytics to improve their performance.

In 2013, several case studies were conducted by SoLAR, in Australia, the United States of America, and the United Kingdom with the financial support of the Australian Government's Office for Learning & Teaching reported that, a few projects didn't achieve any considerable improvement using learning analytics whereas the others are still at early stages of implementation[13]. The Queensland University of Technology discovered an exception result in early intervention programme "has resulted in significant improvements in retention for those students who have been successfully contacted".

In the University of South Australia, SoLAR conducted another study with students at risk, who were studying in various disciplines and reported concrete data and significant outcomes. It appears to be important findings, implying that strategic involvement could be essential for struggling students in any institution.

Papamitsiou & Economides[14] attempted to analyze the experimental proof using published case studies from 2008 to 2013. Around 200 relevant papers were identified in both publications; conferences and international journals, and categorized them into 40 groups based on the number of citations, innovation, the standard of methodology, and presentation quality. The author has further explained, the strengths, some weaknesses, opportunities, and threats in details of using learner analytics. According to that, it is essential to examine developing areas of learning analytics and identify a series of future challenges[15].

Mechanism of Learning Analytics

There are various sources to collect data for adaptive learning systems. However, handling a big dataset of analytics is considered as too large for a standard database system[16]. Commonly recommended sources to collect data within the learning environment for learning analytics are VLE / LMS, where students regularly log in and view their class schedules, submission of assessment, teaching and learning materials of the respective courses or interact with classmates. However, the nature of using VLE / LMS is varying base on module, course, and institute, etc. Further, it will differ from the primary distance learning programme to Massive Open Online Courses (MOOCs). However, Learning Experience Platforms (LXP) was capable of collecting data in a broader range compared to LMS[17]. In addition, learning analytics facilitates better on student engagement in a course even without VLE / LMS / LXP, using secondary data sources such as; Student Information System (SIS). SIS generally consisted of student's data of ethnic-background, past competency data, social and economic status, the achievement of the current course, and module selections.

Some universities have fixed an attendance monitoring system to evaluate learner visits in the university, staying a special place within the institute such as lecture hall, library, laboratory, farm unit, Herbal Park, sports center and media center etc[10]. This can be captured through an entry pass for each location such as a swipe card, proximity card, and QR cord or detecting the location connected to school Wi-Fi. In terms of understanding students' self-academic interest and effort, particularly library data can be elaborated as library visits, borrowing books, assess electronic journals, access national libraries, web access, and online group chats on dashboard/blackboard.

Same as many universities, an institute going to acquire digital technology and establish a learning process, potential data can be stored and filtered from the system to understand student engagement on academic activities and time spent for each subject area. At the end of the semester, the useful set of data can be collected from students for learner analytics through a survey distributing a questionnaire, based on these data, a tutor can provide assistance or arrange extra classes to help students who require additional support. This rich data source will also be beneficial for upgrading module content or further curriculum revision. In addition, E-book platforms can monitor and maintain student information on contacts with learning materials and using frequency. There are some other popular systems in the UK as Intelligent tutoring systems, video lecturing, special games were employed to encourage students and motivate them for deeper engagement[18].

Once creating an opportunity, learners may generate a large amount of data by themselves while utilizing content provided by the institute. Further, they will build owned blogs, create e-portfolios, and develop audio

or video clips and software programme. Furthermore, it is necessary to recognize the types and volume of data collected. Perhaps, those data and knowledge can be utilized in terms of decision making at various levels such as institution level or national levels[17].

Technical Infrastructure

Institutes hoping to initiate learner analytics, in the beginning, should have an appropriate awareness of relevant technologies and the strong consolidation with product and services suppliers, there is always a battle for commercial dominance between VLE vendors and business partners and the latest learning analytics packages. The HeLF survey Newlands *et al.*[10] revealed, various universities were expecting to have a solution for in-house system developments. It is advisable to implement a basic learning analytics solution at the beginning for a new university to get an experience and familiarize with learning analytics as depicted in Figure 1.

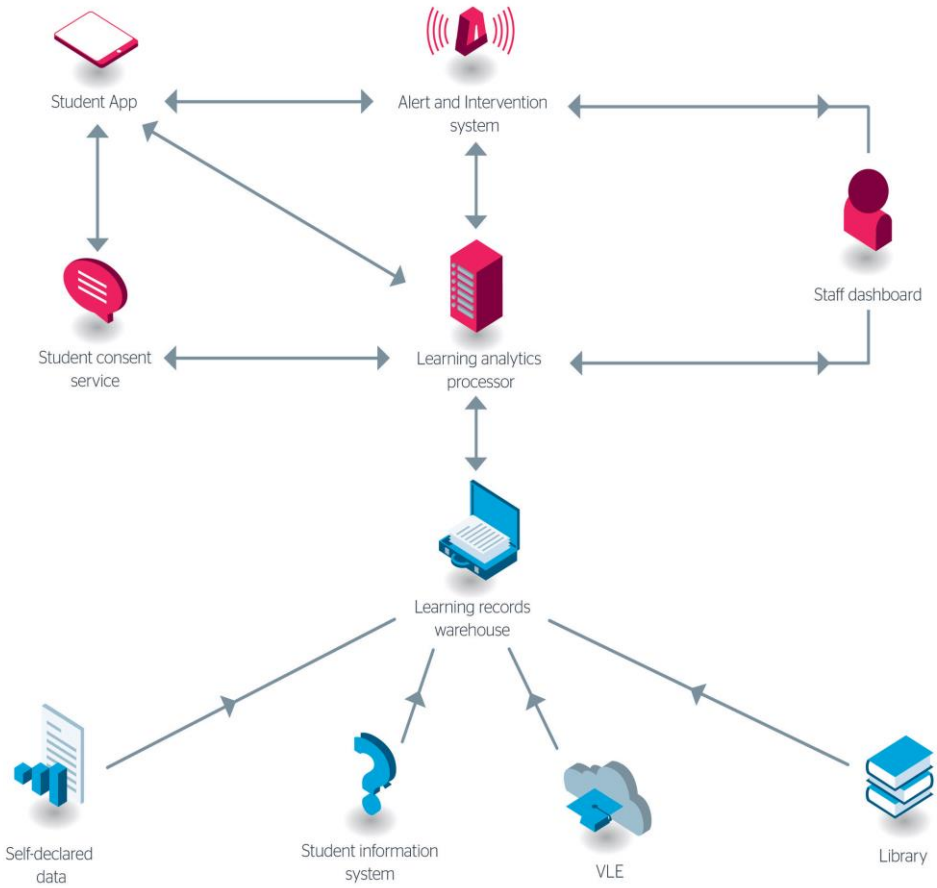

Figure 1: JISC's Learning Analytics Architecture

Figure 1 has shown how data is entered into learning analytics warehouse from different sources such as VLE, SIS, or LXP library. Learning analytics processor performances as the heart of the architecture in which predictive analytics will be developed to send for action coordinated as an alerts and intervention system. The learner can view their own data on the student app, whereas the analytics display information on a series of dashboards for staff or tutors.

The students' app will provide data to students, comparing their engagement and achievement among students, receive positive reinforcement through the app and enable week students to organize their plant to achieve targets in the future learning. Meanwhile, a student will be given permissions for data capture and analysis ensuring privacy.

Benefits of Learner Analytics for Undergraduates

When a fresh student engages with higher education, they may only have a little awareness about own capacities[19]. They may also have gaps in basic knowledge and weak in mandatory skills such as IT, English, and mathematics. Learner analytics have important applications to identify such students and guide them with what they should do to meet educational goals better. It has the potential to transform their understanding of how they perform through continual formative feedback while studying. It also enables students to compare own performances with other students which acts as a motivator or competitive element for many students. Furthermore, analytics facilitate learners to choose modules for the future semester or optional courses, and guide them towards the most suitable study pathway and future career choices[20].

Adaptive learning systems such as learner analytics were initiated for students to skill development and gaining knowledge in a pretty much personalized and self-paced manner. Those are mostly depending on data about the capacity and achievement of the student together with minor details of their clickstream. Which enables the content to understand while students are progressing education. In contrast, an adaptive learning system may not appropriate for some aspects of higher education such as the development of higher-order research. However, through analytics, the university can understand how effectively the content is being used by their students and able to improve accordingly. Students' data can be accumulated and merged with other academic data sources and give a comprehensive picture of the efficiency of learning program to the higher levels in the institution such as Deans, Vice-chancellor, UGC, and ultimately to the policymakers in the government.

Benefits for Institutions

The institution gets various benefits when working together through an open approach as follows,

- ❖ Development of predictive model through the identification of appropriate metrics and sharing expatriates to avoid duplication and a waste of resource.
- ❖ Possibility of sharing learning analytics data anonymously within institutes in order to compare the effectiveness.
- ❖ Institute can expand overall use of learning analytics solutions by creating an opportunity for integrating new products/services with the existing commercial resources provider

Role of Teaching and Support Staff in Implementing Learning Analytics

Supportive staff involvement in problem identification during implementation is crucial to ensure that technical and organizational systems are developed appropriately. The workload of supportive staff may be increased due to a continuous alert system, especially at busy times such as newcomers' induction training, conducting examination, and assignment submission. The support team should have given prior training and awareness of the system for smooth operation. The thorough knowledge of front line staff is central as they should make sure that interferences are applicable and honestly useful for students.

Supportive staff may use learning analytics in the class to encourage positive involvements of students according to the agreed criteria. Even though students' feedback transfers through traffic lights, human mediation is considered as important. Further, lecturers are encouraged to contact students when they reduce engagement with analytics.

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[1] Sclater, N., Peasgood, A., & Mullan, J. (2016). Learning analytics in higher education. *London: Jisc. Accessed February*, *8*(2017), 176

[2] Arnold, K. E. (2010). Signals: Applying academic analytics. *Educause Quarterly*, *33*(1), n1

[3] Siemens, G., & Gasevic, D. (2012). Guest editorial-learning and knowledge analytics. *Journal of Educational Technology & Society*, *15*(3), 1-2

[4] Campbell, J. P., DeBlois, P. B., & Oblinger, D. G. (2007). Academic analytics: A new tool for a new era. *Educause Review*, *42*(4), 40

[5] Ferguson, R. (2012). Learning analytics: drivers, developments and challenges. *International Journal of Technology Enhanced Learning*, *4*(5/6), 304-317. http://oro.open.ac.uk/36374/

[6] Long, P., & Siemens, G. (2014). Penetrating the fog: analytics in learning and education. *Italian Journal of Educational Technology, 22*(3), 132-137.

[7] Dawson, S., Gašević, D., Siemens, G., & Joksimovic, S. (2014, March). Current state and future trends: A citation network analysis of the learning analytics field. In *Proceedings of the fourth international conference on learning analytics and knowledge* (pp. 231-240)

[8] Sclater, N. (2014). Learning analytics: The current state of play in UK higher and further education. *Jisc, available at: http://repository. jisc. ac. uk/5657/1/Learning_analytics_. pdf (accessed 30 October 2017)*

[9] Lim, K. C. (2015). Case studies of xAPI applications to e-Learning. In *The Twelfth International Conference on eLearning for Knowledge-Based Society* (pp. 3-1)

[10] Newland, B., Martin, L., & Ringan, N. (2015). *Learning analytics in UK HE 201 5: A HeLF Survey Report*. Retrieved from: https://drive.google.com/file/d/0Bz7E74T5Am22UEM1c0FxRjVpMzA/view

[11] Shacklock, X. (2016). *From bricks to clicks: The potential of data and analytics in higher education*. London: Higher Education Commission.

[12] Buerck, J. P. (2014). A resource-constrained approach to implementing analytics in an institution of higher education: An experience report. *Journal of Learning Analytics*, *1*(1), 129-139

[13] Siemens, G., Dawson, S., & Lynch, G. (2013). Improving the quality and productivity of the higher education sector. *Policy and Strategy for Systems-Level Deployment of Learning Analytics. Canberra, Australia: Society for Learning Analytics Research for the Australian Office for Learning and Teaching.* Retrieved from: https://solaresearch.org/wp-content/uploads/2017/06/SoLAR_Report_2014.pdf

[14] Papamitsiou, Z., & Economides, A. A. (2014). Learning analytics and educational data mining in practice: A systematic literature review of empirical evidence. *Journal of Educational Technology & Society*, *17*(4), 49-64.ifets.info/journals/17_4/4.pdf

[15] Ferguson, R. (2014). Learning Analytics: Drivers, developments and challenges. *Italian Journal of Educational Technology, 22*(3), 138-147. /

[16] Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Hung Byers, A. (2011). *Big data: The next frontier for innovation, competition, and productivity*. Washington: McKinsey Global Institute. Retrieved from: https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Big%20data%20The%20next%20frontier%20for%20innovation/MGI_big_data_exec_summary.pdf

[17] Duin, A. H., & Tham, J. (2020). The Current State of Analytics: Implications for Learning Management System (LMS) Use in Writing Pedagogy. *Computers and Composition*, *55*, 102544

[18] Lecon, C., & Herkersdorf, M. (2014). Virtual Blended Learning virtual 3D worlds and their integration in teaching scenarios. *9th International Conference on Computer Science & Education - 2014* (pp. 153-158). Vancouver: IEEE.

[19] Pistilli, M. D., & Arnold, K. E. (2010). Purdue Signals: Mining real-time academic data to enhance student success. *About Campus*, *15*(3), 22-24

[20] Rajni, J., & Malaya, D. B. (2015). Predictive analytics in a higher education context. *IT Professional*, *17*(4), 24-33

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