FOSTERING AN "EPIDEMIC" TEACHING & LEARNING ECOSYSTEM IN VIRTUAL LEARNING CLASSROOM

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Abstract:

Virtual teaching and learning have become the new norm to the education sector due to the hit of the Covid-19 pandemic. Because of the Movement Control Order (MCO) implemented by the government, all educational institutes were closed and need to operate virtually to continue the teaching and learning process. The main objective of this study is to develop an effective and impactful ecosystem to improve online teaching quality in virtual learning classrooms that can always keep students engaged and motivated. The education ecosystem is defined as an interconnecting system of various parties such as technology, educators, students, techniques, strategies, approaches, tools, and materials used in the classroom. Moreover, to create a dynamic online education ecosystem, educational resources need to seamlessly work together. Researchers explore the RICES strategy as the main element to develop this online education ecosystem. RICES strategy was developed from Rogers' Humanist Theory, whereby R is the roles and relationship, IC is instruction and communication, E is emotion, and S is the structure. The term "epidemic" is chosen because it reflects the extensiveness or comprehensiveness of the ecosystem to be built. This paper presents a survey of 200 Multimedia University Melaka students who have experienced in virtual learning classrooms. A descriptive study was conducted to determine the most significant element in the RICES strategy. Results indicated that roles and relationship (R) is the most important element to keep the bond alive and well in online teaching. Finally, some suggestions for educators on how to successfully manage their classrooms were also discussed.

Keywords:

Education, 21st-Century Students, Teaching And Learning, Ecosystem, Virtual Learning

Introduction

The Covid-19 outbreak has impacted businesses of all sizes and industries of various kinds. The higher education sector is not exempted. As of 13 April 2020, schools and universities have been closed as an attempt to limit the spread of novel coronavirus disease (COVID-19). Worldwide, lectures and tutorials classes have had to be moved online immediately but this comes with several challenges. The most challenging part is how to maintain a good quality of teaching. Although classes can be conducted online, the quality of interaction between lecturers and students will be disrupted.

According to Carol H. Sawyeer (2010), she describes an ecosystem as a well-structured lecture class, planned and delivered. So, in the context of a virtual classroom, it is even more important to foster and develop this teaching and learning ecosystem. This is because a virtual class requires a more student-centric approach compare to a physical face-to-face class. Thus, it is important to make sure the virtual class is fun and well organised. As Afzal, Ali, I., Khan, M., and Hamid, K. (2010), discuss in their research that students will show positive attitudes when they are happy. There is no one-shoe-fit-all concept in this virtual learning, teachers need to make sure that they are well equipped with interactive online tools, understand the teaching methodology, strategies to be used in getting their attention and communicate with them effectively. To conduct effective virtual learning, educators should make sure to facilitate experiential learning with interactive elements, engaging varied learning styles, facilitating critical thinking, and encouraging collaborative learning experiences (Tapscott, 2009). Educators should realise that higher-order thinking skills are more important than ever in creating discussion or assessment content because we do not want to simply be delivering the content straight out from the textbooks (Boling et al, 2012).

Problem Statement

The COVID-19 epidemic currently forcing the entire world to change especially in education whereby it has affected millions of students. These problems point to a critical gap in school-based contingency planning within the broader education sector preparedness planning and emergency management. The development of the ecosystem is ensuring the continuity of education so that the lecturer will experience a more immersive teaching and learning environment even though during the COVID19 crisis. Researchers also would like to see the significant relationship between the RICES strategy in building the teaching and learning ecosystem, which later eventually brings to an effective and impactful virtual class. This paper also tries to highlight that despite traditional or virtual class, student's experience and student ability to learn in a fun and comfortable environment is still significantly the main objective.

Research Objective

The ecosystem is ensuring the continuity of education so that the lecturer will experience a more immersive teaching and learning environment even though during the COVID-19 crisis.

Research Question

i.   How can virtual learning help to solve all issues highlighted?
ii. How can this ecosystem implication help lecturers their virtual class?
iii. Which element between R, I, C, E, and S play an important role in the teaching and learning ecosystem in a virtual learning classroom?

Literature Review

Epidemic

Based on the Cambridge dictionary "Epidemic," n.d. means the appearance of a particular disease in a large number of people at the same time. Universities must immediately prepare their emergency plans by developing contingency plans for epidemics, but also identify ways to continue educating and supporting students and teachers if universities are closed for a longer period.

Teaching and Learning

According to Robbins, K. (2019), virtual learning is referring to a teaching and learning process that takes place over the Internet at any time and place. With this being implement in all education level, students and teacher was 'force" in a way to quickly adapt and execute this new norm. In the virtual classroom, both students and teachers need to be agile to adapt to this, Base on a study done by Computer-Aided e-Learning (2020), they discover that the roles that normally being played by students and teacher in the physical class have changed. Besides that, a virtual class setting needs more elements on engagement, interactive, and more feedback or sharing from both sides. No doubt that the online learning environment gives more autonomy to the students, but it still requires self-directed learning and self-discipline which may affect the success or failure of the students.

Ecosystem

Ecosystem by definition means a large community of living organisms and physical components in a particular area that is linked together through nutrient cycles and energy flows. Taking this term metaphorically into the context of a virtual classroom, we can see that virtual classroom components should have a link with each other. The components such as the role of teacher and student, the tools that are used to conduct class, the activities implemented to engage with students, and many more components. Based on Ally (2004), the online learning experience comprises of students, teachers and the course curriculum require the use of technological tools for accessing the online environment. All of these components will somehow need to be a link to each other to create effective and impactful teaching and learning process.

RICES Strategy

Roles & Relationship

In the 21ˢᵗ century, an educator has to play multiple interesting roles, for example, facilitator, moderator, counselor, controller, and many more. The two roles that this paper will be highlighting in reflect on developing an 'epidemic' ecosystem is moderator and facilitator. With these ecosystems, educators can create an interactive, impactful, and effective virtual classroom.

The first role will be moderating. In the virtual class, the teacher must play the role of a moderator, this is because they need to make sure there is a continuous content-focused interaction with their students. This can take place by reassuring them to participate in discussions and individual/group activities. The second role will be facilitation/coaching. With this role, educators need to disseminate information and give direction to assist the student to complete their projects, exercises, or activities. In the virtual learning process, the instructor

needs to facilitate to make sure that the student is well guided and is not lost in the 'space' of guessing or sometimes assuming what is the instructor is saying or does not know what to do at all. If they don't facilitate, the instructor would not know whether the student is doing their work or even understand what needs to be done. That is why instructors should master the art of facilitation because students feel secure in a way if there is proper facilitation. They will feel more confident if there is someone there to coach and give them advice. For example, some online classes integrate team-based learning in their virtual classroom structure. Facilitation in team-based learning is where the instructor leads the class discussion to ensure that the students correctly understand the content and have achieved the learning outcomes for that topic. The student might struggle in understanding the pre-work material posted, this is where the teacher comes into place as a "guide on the side' to clear the doubts. Bargava and Pathy (2011) believe that as a teacher, they play a role as a motivator booster to build confidence in her students and at the same time cultivate independent study among their students.

Building relationships through communication is one of the best ways. As you can see here the 2 components of RICES link and complement each other. This is what it meant by the ecosystem in a classroom. Using an introduction method can be a very interesting way to introduce yourself to your student or student to an educator. An introduction "icebreaker" will always be the method that can spark the bond among the students and teaches in the ecosystem. A study was done by Suarman (2015) mentions that lecturer students' relationship brings towards satisfaction in students. The instructor needs to be more flexible and supportive in a virtual class. Apart from it, the instructor should play an active role in performing their duties as motivators, guiders, facilitator, and educators.

Instruction & Communication

Messages and instructions that are delivered in the virtual class should be concise and clear. There should be no room for students to do assumptions and later lead to becoming confused. If needed the instructor should show them a diagram of a step by step, just to make sure those learners that are visual learners can benefit from this method. Graphic or picture sometimes works better than text-only messages. The subject should be organized properly before the class starts. The instructor should share the detailed instructions and expectations before the class. Instructors also should be smart in anticipating which area can go wrong and make students confuse. Students might understand certain instructions because they assume and analysis in their way. So, instructors need to make sure those areas that can create such misunderstanding being minimized. For example, an instructor can minimize this by preparing a very detailed teaching plan, syllabus, useful links, and a piece of information may be in video form that is easier to be view and understand, (Thomson, 2010)

Communication is remarkably one of the most important essential to an effective online course (Lehmann,2004, p.9) which later leads to an increase in motivation and satisfaction toward leaning online. The objective of online communications is the same as the objective in traditional class communication, which is to create a relationship, to share information, and to give or gain feedback. Educators need to communicate effectively with their students in ways that they can show support and enhance their learning process. When and how you communicate with your students in a timely and effective manner. Indeed, it is true that communicating with students in an online environment needs more preparation and planning because the absence of our body language and facial expression to help our information to get across and reach the students. But as educators, that has a passion to develop our students, we

need to find continuously new methods to communicate with them. Educators need to identify the reason why they need to communicate with their online students. To gain this answer, teachers need to know the conclusion you want to achieve with the communication you are sending to your students. Developing timely, relevant, and useful communication is important to make sure that the information is delivered to students, and the students received it with adequate understanding (Kilgore, 2016). Students will tend to get frustrated if they fail to capture what their instructor is talking about or what information they are trying to portray. Students will just give up and do something else instead of having the motivation to continue listening to the instructor. So, to make sure that educators can create an effective virtual class, they need to create this 'epidemic ecosystem' and communication is part of the main component in this ecosystem. Because most of the time on a virtual class communication takes place. In the virtual class, the instructor should use as few words as possible and simple to comprehend in their messages or lecture when they communicate with their students online. Make sure the messages are short and simple to read and listen too.

"Effective communication is like a two-way street. It is not just about how you deliver the message for the other party to understand it the way you intended, it is also now looking at the ability of you listening to gain the full meaning of what is being said and to make the other person feel heard and understood" Robinson, Segal, and Smith (2015). This statement is suggesting that educator should use multiple communication medium to communicate, which it sometimes requires thinking out of the norm. Educators should research and go for an "adventure" to search the tools available out there to be sued and enhance their communication with their students.

Venable (2015) says that if an educator personalizes their communication, it will help to connect with and build positive relationships with the students even it is virtually. The Gen-Z students especially want to feel the engagement and interaction with their teacher/lecturer. Making your communication personal does not mean that you can simply use bad netiquette or judging them, making communication with your student personal can be as easy as providing background about yourself at the beginning of the class so that they can know you a little bit better. Or you can try remembering their name and use their name when responding to their question or emails. A communication that is categorized impactful always has a feedback session in it. Wong (2005) says that the instructor's feedback is a key aspect of the teacher-student interaction process. He also continues saying that students view this feedback as a measurement of the instructor's interest in them. The instructor also should respond to students promptly because it can establish trust and level of comfort (Thomson, 2010).

Emotion

Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., and Perry, R. P. (2011), stated that academic emotion in students across class and learning consists of emotions like enjoyment, anxiety, frustration, and burdensome. Pekrun continues stating that positive emotion such as enjoyment has seen to be directly related to intrinsic motivation and self- regulation. Whereby if the student has negative emotions such as frustration and boredom, the student most likely will have lower interest, lower performance and will have lower self-regulation in learning (Artino, 2009b; Daniels et al, 2009; Pekrun et al, 2011. It is believed that student's academic outcomes are influenced by their emotion (Artino, La Rochelle, & Durning, 2010). Artino & Stephens (2009) says that learning online will let the students have more autonomy and self-

direction compare to a traditional classroom. the control for learning is already shifted from the lecturer to the student (Hartley & Bendixen, 2001).

In a virtual class, an instructor should not only focus on the environmental factors like the course structure, but also an important focus on intrinsic motivational factors for a successful virtual class and experience from the learner. So now we can see that the emotion of students plays an important role in the virtual learning classroom because it is focusing on a student-centric approach. The environment of the virtual class should be directed to making the student happy and engaging. This is also highlighted by Schutz, Hong, Cross and Osbon (2006), emotional experiences happen in a person-environmental transaction that exists in the class. In reflect with this emotion component being part of the ecosystem, clearly shows that student's emotions do play an important role to make sure they get to develop a virtual class that is engaging and efficient. If a student has negative emotion this will lead to a decrease in their interest and motivation, this will automatically destruct the ecosystem in the virtual class. So as educators we need to have emotion awareness, where they can perceive and identify their student's emotions (Boden & Thompson, 2015). Knowing their emotional status can make the instructors in class able to enhance their student learning (Linnenbrink-Garcia L., & Pekrun, R. (2011) Educator's emotional intelligence vitally affects the creation of a healthy emotional climate in the classroom. They need to create an environment where students can practice self-regulation. Matuga (2009), mentions that self-regulation is where the student can plan, observe, and appraise their behavior and learning strategies. So, when the virtual class is created with this element in it, students will have positive emotion which later leads to demonstrating positive acceptance and interaction in class. The more student has positive emotions during virtual class, the more they believed they can interact fruitfully with others and this will create a more engaging environment in the class. Self-regulation is one of the key pieces of the puzzle in completing the success in a virtual class. And is also a piece of the puzzle that completes the ecosystem.

Structure

Structuring your online class is vital to make sure that the quality of information and the teaching and learning process is preserved. This quality is referring to the curriculum that being design which includes the guidelines of the course, learning measurable outcomes, assessment methods, interactive learning strategies, resources and materials, and finally the learner support (Quality Matters Program, 2013). To be able to have a good structure, an instructor has to make sure they make early planning and preparation. Planning early is the main priority and main key to build a good structure and flow of the virtual class. This planning covers the arrangement of the activities, how we want to carry it out, what online tools we want to use, and how we want to get feedback or give feedback to students. This all matters to structure your online class. Just like the normal traditional class, a teaching plan is needed to guide the instructor to execute their task and to cover the topics following the plan.

The instructor must know what activities that needed to be inserted in the activities so that they can create a more engaging and interactive class environment. They need to provide cooperative learning opportunities so that this can enable critical thinking, brainstorming, and dynamic discussion among students virtually. To instructors that are familiar with teaching pedagogies, they can implement pedagogies like Bloom's Taxonomy, where Bloom's will trigger the higher-order thinking skills of the students. These kinds of activities will allow students to do decision and discover ways to solve a real-world problem. Instructors should

know what and how to structure their class. Arranging the activities like online discussion, debates, and constant feedback that can promote engagements with students so that we can enable a greater motivation and deeper learning among them (Twigg 2003a,). Generation Z students that are studying online demand more interaction and innovation in the teaching content compare to in a traditional class. Students ideally demanding for innovative course delivery for example examples that related to the real world, facts, and real experiences. These elements in the structure of the activities or content of the instructor can bring a positive impact on students' satisfaction and will impact the retention in the class (Northrup, 2002).

The creative usage of social media in one of the structures of activities can enhance the student's learning process. Instructors can use these platforms for discussions, chats, group work, and video lessons. Students are familiar with this platform and can adapt easily to it. This will create a positive emotion because they are happy, they get to learn and follow the class.

Humanistic Learning Theory
Humanistic Learning Theory is used in this paper because of its nature of approach which is learner centric. It focuses on the student's potential rather than the explicit learning resources, propagating for a better, meaningful, and useful learning experience the students can use and imply in many circumstances (Hare, 2019). This theory is used to make sure that every single component in RICES is reflected in the main goal which is the learner-centric approach. As each of these components was developed from this learning theory. In this theory, the teacher is assumed to play roles as a coach or facilitator to help students in creating and using their learning strategies to achieve their goals. Teachers need to be attentive to the student's unique needs, they need to give support towards students that want to gain certain knowledge they desire. Hare, (2019) also mentions that, by attentively understand their unique needs, the teacher can design a supportive ecosystem that helps student's knowledge and emotional development. He continues saying that, teachers also have to make sure that learning activities are filled with actual life experiences, so that students can apply the learning to their daily life, which the significant notion in Roger's Humanistic Learning Theory.

Methodology
Since there is a fewer amount of studies done on this topic, the researcher will use the exploratory research design. Exploratory research type design is used by conducting online questionnaires. The questionnaire includes three sections whereby Section A is for demographics, Section B is for Teaching and learning in virtual class and Section C for four variables that have been tested for this research (R, I&C, E, and S). For section C, six questions for each element and the student answers on a Likert scale.

Sampling Design
Convenience Sampling was used for the study since it includes students who were easy to reach.

Sample Size and Area of Study
200 students from Multimedia University (MMU) Malacca were the participants of the study.

Student Survey
The main objective of this study is to determine the best RICES component that can help lecturers in giving their lectures more effective and efficient even in a virtual class.

Statistical Analysis Tools

The data has been analysed by calculating the percentage analysis using excel.

Percentage analysis is done for understanding on which element that has more significance towards virtual teaching and learning.
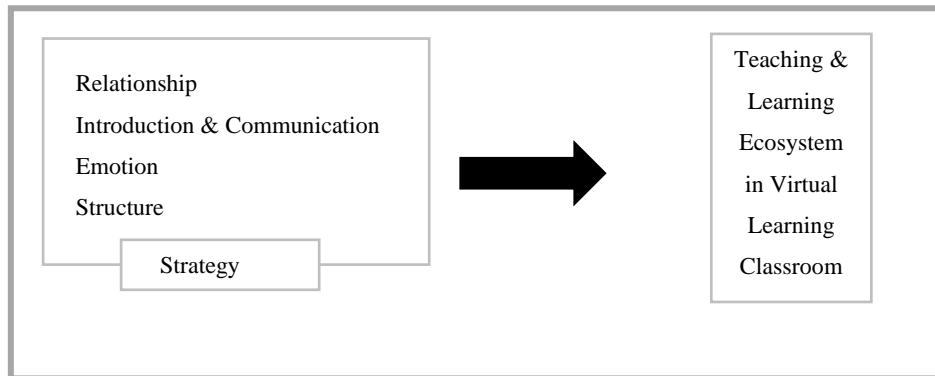
The Research Framework

Figure 1: A Descriptive Framework of Teaching and Learning Ecosystem in A Virtual Class
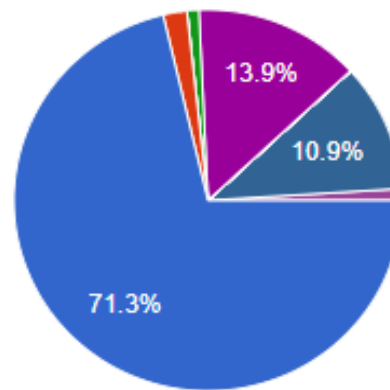
Findings and Discussion

Figure 2: The Percentage of Students Level of Education and Program

From section A, a total of 151 MMU Malacca students participate in this survey. 10.9% is Bachelor of Administration students, 13.9% is foundation in business students, and a majority of 71.3% is Diploma in Business Administration students.

Teaching & Learning Ecosystem in Virtual Learning Classroom

The data collected from the questionnaire show that students 'perception and opinion towards the virtual and traditional classroom.

| Statements	Avg
I would learn better in face-to-face education.	4.13
A virtual learning class can present the class with much clarity than the traditional class.	2.77
My coursework marks improved during the virtual learning class.	3.20
I feel boring in the virtual learning class.	3.57
The virtual classroom was a worthwhile experience in 1930.	3.25
Overall, I enjoyed my virtual learning class.	3.14
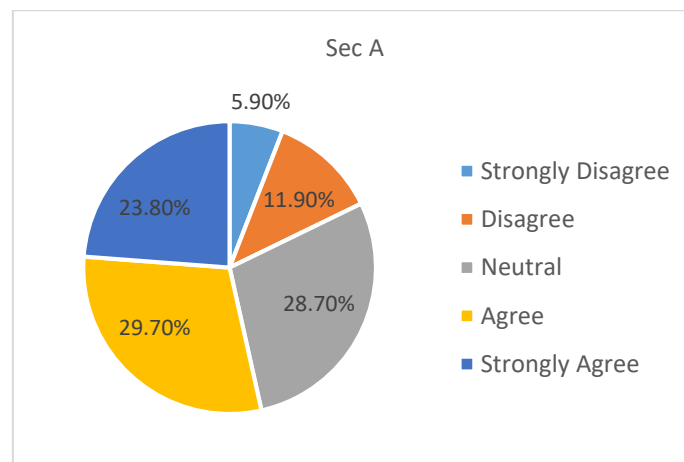
Figure 3: Survey Result on Student's Opinion Towards Virtual and Traditional Classroom

Figure 3 shows 53.5% of students agree and 28.70% of students are in a neutral situation. So, it is clear that the majority of students with experience in the virtual class feel that they are not comfortable with these new norms.

Roles and Relationship
For this section, students were asked to rate the importance of multiples role need to be played by a lecturer and maintain a good relationship with students in the virtual class.

Statements	Avg
The lecturer should create creative learning environments according to the various learning styles.	4.48
The lecturer should encourage students to participate during an online class.	3.38
The lecturer should play the role of a moderator in a virtual classroom.	3.93
I felt that the quality of class discussions was high in the virtual classroom	2.98
The lecturer should create a relationship with students so that they can understand each other better	4.06

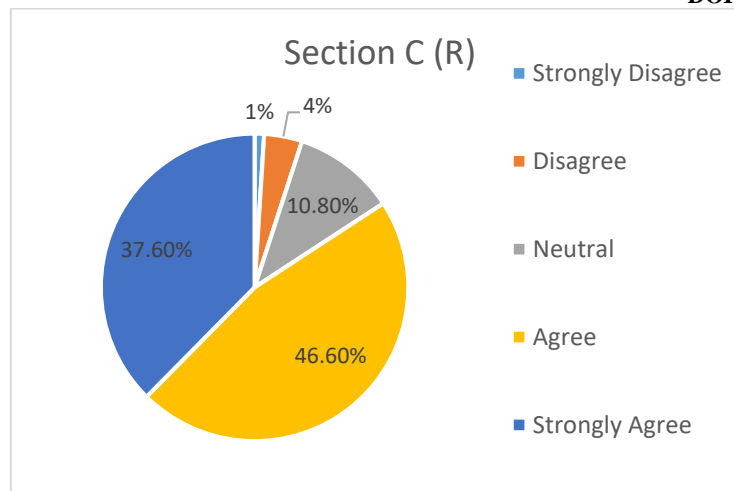The lecturer should create a relationship with students so that they can understand each other better.

Figure 4: Survey Result on The Importance of Multiples Role Need Played by Lecturer and Maintain A Good Relationship with Students in The Virtual Class

The above figure shows that 84.2% of students agree that the lecturer should create a relationship with them in a virtual learning environment. Although students cannot face-to-face with their lecturers for that semester, they still demand the bonding.

Instruction and Communication
In terms of instruction and communication, several questions were asked in the questionnaire for students to rate how important this element in their new norms of teaching and learning.

Statements	Avg
The lecturer should give clear instructions and use simple words in an online class.	4.29
The lecturer should prepare instructions in the form of graphics or videos. (eg: infographic)	2.59
The lecturer should give the instructions before class, so we can have more time to read and understand it.	3.06
My lecturer tries many ways to communicate with us during online class and off-class time	3.03
I was given space to give feedback and my lecturer always give feedback in the online class.	3.48

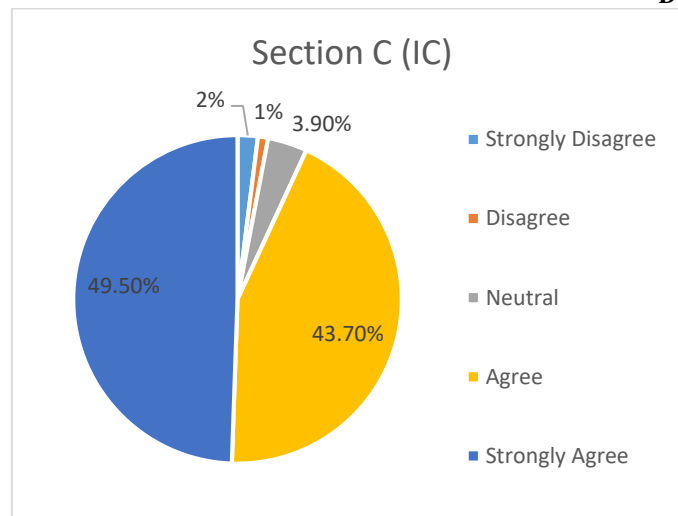The lecturer should give clear instructions and use simple words in an online class.

Figure 5: Survey Result on The Importance of Instruction and Communication in Virtual Class

The above figure shows that majority of 93.2% of students agree that clear instructions can present the class with much clarity than the traditional class. So, it shows that the lecturer needs to provide students with proper communication to make them attached throughout the virtual learning class.

Emotion
Virtual classrooms are without a doubt the way to learn in the future. This type of class will prove to be highly effective if the lecturer can build on the human aspects of physical classrooms.

Statements	Avg
The instructor increased student motivation by encouraging them to do their best.	3.83
I feel enjoyment and happy during my online class.	3.15
I can manage my own learning better in online courses.	3.07
The instructor was supportive and responsive to my questions.	3.49
Sometimes, I did not feel a sense of belonging in the online class.	3.26

The instructor increased student motivation by encouraging them to do their best.
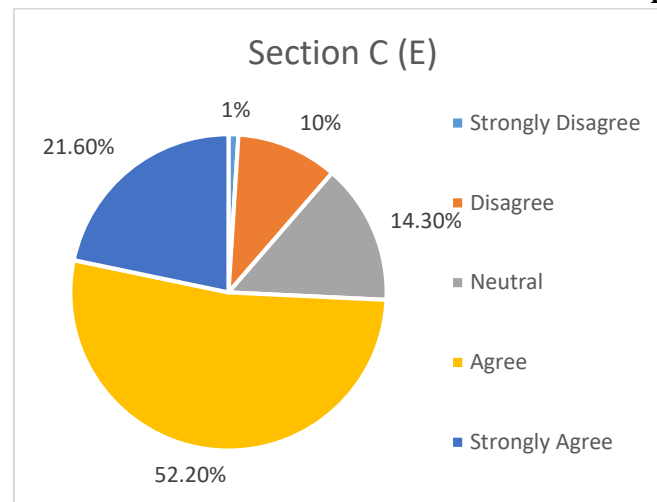
Figure 6: Survey Result on Emotion as Important Element in Virtual Classroom

Pandemic COVID19 is challenging for everyone including students. It is inferred that 73.80% agree that motivation from the lecturer is important to encourage positive emotion.

Structure
As a contingency plan to cater to the MCO period and until it's safe to return to campus, the lecturer needed to plan and structure their class. How and when to deliver the content is the most crucial part to be considered.

Statements	Avg
My online class is structured and plan well by the lecturer.	3.27
Lecturer should prepare activities that can create group work in an online class.	3.82
The lecturer should give us more activity topics related to real-world experience.	2.91
The lecturer gave students enough time to finish the activity during online classes	3.09

The lecturer should prepare activities that can create group work in an online class.
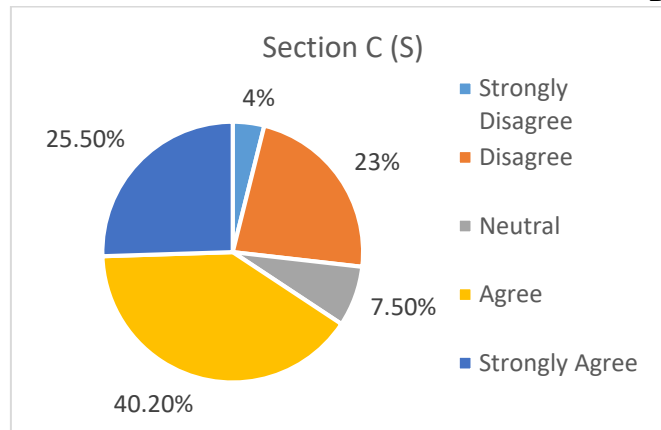
Figure 7: Survey Result on The Importance of Planning and Structuring the Virtual Classroom

From the interpretation, 65.7% of students feel enthusiastic about the days when they have virtual learning classes because the majority of them expect some activities prepared by the lecturer.

4.7 In your opinion, which component of RICES is the MOST important to make your virtual learning class more effective and impactful?

Figure 8: Survey Result on The Most Important Component of The RICES Strategy

Above figures show that the majority of 45.1% of students agree that first RICES element which is relationship and role will play the most important elements to be the focus on their virtual class journey
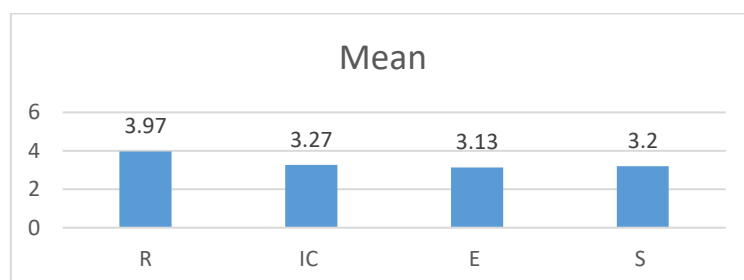

Figure 9. Mean for R, I, C, E and S

In the last section of the survey, the researcher wants to determine which RICES strategy is the most impactful to capture their attention in the virtual class. By using Microsoft Excel, the mean for each independent variable were tested to know which element gives the highest rating to the strategy.

The mean value role and relationship is the highest and above 3.50. It shows that role and relationship is the core element in the virtual class ecosystem. As a conclusion, teaching with technology is not a one size fits all approach (Gillett-Swan, J., 2017). This is the main reason why a lecturer needs to be creative by playing multiple roles during online class to social relationship building as enhancing the student experience online.

Conclusion

As we can see from this study, despite it is a traditional classroom or a virtual classroom setting, every single component in the teaching and learning process is interconnected. This will eventually result in the impact and outcome of the learning process. The learning pedagogy that has been mention earlier in this paper is the base or guideline on where the entire RICES strategy is heading in shaping the ecosystem. The learning theory which focuses on the student is the best guideline for this ecosystem. The result of the study also shows that if we focus on the student more in the class, we can make the virtual class more engaging and efficient.

Base on the result of this study shows that the RICES strategy should be practice in order to create this "epidemic' ecosystem. And the most significant component in the strategy is the roles and relationship. So as an educator we do play an important role to make sure that the ecosystem is built, and it works. Instructor themselves should put effort into creating a virtual classroom that benefits and give impact to students. Hutchison (2012) says that the educator that has the effort to improve their teaching and learning environment will do something to make sure they create a concrete foundation to achieve their objectives.

Students demand more engagement in a virtual class compare to a physical class. Implementation of the RICES strategy will help in developing an ecosystem where educators and students can learn in an effective and positive environment. Successful classroom management can be label as one that has the participation of the students and engagement.

Recommendations

Virtual learning classroom is not only about internet communication, but also about blended tools and parties involved in this online education ecosystem. Finding for this study shows that emotion is also an important element to be focus on during conducting the online classes. Researchers suggest addressing these concerns; how to be humanizing online classes. Feedback from the students, some of them often feel isolated which may decrease interest and motivation in an online class.

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