# A Framework for Transitioning to Virtual Classes During Life-Threatening Pandemics Like COVID-19

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**Abstract:** This research explains the benefits and challenges of virtual classes as experienced by university students during the coronavirus (COVID-19) pandemic. The limited research on university students' experiences in virtual classrooms during the COVID-19 pandemic, which disrupted physical classes and forced educational institutions to blindly switch from physical classes to virtual classes, served as the inspiration for this study. The absence of a framework for smoothly transitioning from physical classes to virtual classes challenged this process. Furthermore, relatively few studies have been done on the empirical context of a developing nation with distinct social and economic circumstances, concerning university students' experiences of virtual classrooms during COVID-19. Thus a quantitative study using a single case study of a university in Southern Africa was guided by the duality of structure in Giddens Structuration Theory, which explains students' experiences by highlighting both positive aspects—such as flexibility, collaboration, accessibility, and availability of course materials—and negative aspects—such as high costs, boredom, and a lack of resources and training. Analysis was done using Microsoft Excel and the findings also showed how, during the COVID-19 epidemic, structures of dominance, signification, and legitimacy formed as a result of behaviors related to leadership, resources, empowerment, and adoption, which both facilitated and hampered the smooth transition to virtual classrooms. The paper concluded by proposing a framework for transitioning to virtual classes during life-threatening situations like the COVID-19 pandemic. Although not generalizable across all university contexts, these findings provide a foundation for understanding the university students' experiences in virtual classes during COVID-19. These findings have both practical and theoretical implications since they both provide an explanation of experiences in virtual classes as well as propose a framework for guiding the process of moving away from physical classes towards virtual classes during life-threatening situations.

**Keywords:** COVID-19, virtual classes, experiences, students, benefits of, challenges

## 1. Introduction

The year 2020 and 2021 brought changes in the way of living globally. During this period, COVID-19 spread across the globe, making it difficult to proceed with activities that required physical contact. Regarding the situation in the COVID 19 era, Dhawan (2020) observes that the " major part of the world is on quarantine due to the serious outbreak of this global pandemic Covid-19 and therefore many cities have turned into phantom cities and its effects can be seen in schools, colleges, and universities too". These sentiments confirm that COVID-19 had a major impact on the day-to-day activities and more on the education system where the mode of instruction delivery required physical classes. As such, higher education institutions were compelled to transition from physical classes to virtual class-based pedagogy (Dhawan, 2020; Vincent-Lancrin, 2022). Online learning became an important aspect of higher education as it could be conducted with minimum or no physical contact, following the health sector government requirements globally. This meant that the students would be distant not only from their instructors but also from each other. Their interaction was only facilitated by technology which could have had either a positive or negative impact on the students. It is against this background that this paper investigates the benefits and challenges faced by students during online learning using a single case study of a Southern African university. Furthermore, a framework is proposed which can act as a guide towards successfully transitioning from physical to virtual learning in future pandemics. Mutunhu (2023) notes that the African context is unique, thus frameworks are required as new technologies are emerging where features and utility of the technology, the context of usage, and the user technology need to

be considered. Thus, the paper starts by outlining the problem statement and objectives of the study, previously done research, methodologies, and finally the discussions and findings of the study.

## 2. Problem statement

Literature has evidence that despite the need for a well-designed and properly planned transition to virtual classes, the sudden emergence of COVID 19 compelled the education institutions to change the pedagogical approach and immediately shift from physical to virtual classes (Aguilera-Hermida *et al.*, 2021; Dhawan, 2020; Maatuk,2022 ). Such a swift move impacted both the instructors and students alike because "many higher education institutions were not prepared with appropriate e-learning platforms and online educational resources" (Aguilera-Hermida *et al.*, 2021). Literature also acknowledges that there is limited literature that explains the experiences of students during COVID-19, a period where most classes were turned into virtual classes. These authors, therefore, recommended that future research must focus on students' experience during emergency online learning due to COVID-19. For example, it has also been acknowledged in the literature that "transitioning to online learning due to COVID-19 has been a highly complex undertaking for higher education institutions" (Aguilera-Hermida *et al.*, 2021). This challenge has been worsened by the fact that there are limited or no frameworks to guide the transitioning to virtual classes during the life-threatening pandemics that may hinder the physical classes. On this note, existing literature emphasises the need for research that develops specific strategies and/or interventions that promote the transition from physical to virtual classes in different countries in case of pandemics or natural disasters (Aguilera-Hermida *et al.*, 2021; Mukhtar *et al.*, 2020). It was with this mindset that this study sought to answer the subsequent research questions.

### 2.1 Research questions

Existing literature has revealed the need for more research on university students' experiences and performance during lockdowns (Aguilera-Hermida *et al.*, 2021). It was on this note that this study sought to establish the university students' learning experiences after transitioning to virtual classes during the COVID-19 pandemic. To achieve this goal, the following questions were to be answered.

- **RQ1:** How did university students benefit from transitioning to virtual classes during the COVID-19 pandemic?
- **RQ2:** What challenges were faced by university students in attending virtual classes during the COVID-19 pandemic?
- **RQ3:** How can the faced challenges be reduced in the future during similar life-threatening pandemics that may hinder physical classes?

## 3. Related work

Online delivery of education instruction has been researched over the years and has been associated with both benefits and challenges. The benefits of technology-mediated education include flexibility, collaboration, content sharing, easy access to content, etc. Despite the vast knowledge about both the benefits and challenges of e-learning, several studies were conducted to explain perceptions about online learning, and factors influencing acceptance and use of technology during COVID-19. For example, Bdair (2021) conducted a qualitative study relating to nursing students' perspectives about online learning during the COVID-19 pandemic. Their findings revealed both academic achievements such as improved scores and improved technology usage skills as well as challenges like inadequate infrastructure, lack of training, use of varied unfamiliar platforms, distractions from the environment, limited collaboration, increased workload, technological incompetence, etc. Similar studies by Lemay, Bazelais, and Doleck (2021); Salakhova (2022) explored how the pandemic influenced student perceptions of online learning and their results show that in addition to environmental and technological issues, the students experienced social challenges such as stress, anxiety, lack of discipline, communication and interaction problems. A comparative study by Aguilera-Hermida *et al. (*2021) analysed and concluded that attitude, affect and motivation were the major factors that influenced the college students' use and acceptance of technology during COVID-19. Another study by Demuyakor (2020) revealed that students perceived online learning as very useful despite having challenges with internet connectivity. Adedoyin and Soykan (2020) identified technology, intrusion, digital competence, supervision, and compatibility as some of the major challenges of online learning during COVID-19. Dhawan (2020) conducted a Strengths, Weaknesses, Opportunities, & Challenges (SWOC) analysis of e-learning modes in times of crisis like that brought about by COVID-19 and similar natural disasters. Their findings are

summarised in Figure 1. In another study on students' perspective toward online learning, it was established that in addition to convenience and affordability, the students also experience health problems due to prolonged glare on the computing devices (Octaberlina and Muslimin, 2020). Furthermore, it has been argued in the literature that the challenge of online learning during COVID-19 included a compromise of academic integrity, decreased quality, plagiarism, limited attention span, and a lack of attentiveness during class.

The existing literature was however limited to studies conducted in developed countries, which has left a gap in studies involving universities in developing countries, a context with limited resources. It was against this realisation that existing literature acknowledges the fact that not all countries have the same conditions, and that students do not have the same resources to participate fully in virtual class environments (Aguilera-Hermida *et al.*, 2021). Existing literature, therefore, recommends that further studies be conducted on a similar topic, with a focus on cases from different regions (Bdair, 2021; Lemay, Bazelais and Doleck, 2021). There was also a theoretical gap in the reviewed literature since many studies were not guided by any theory for a better understanding. Most importantly, the reviewed literature was limited to a discussion of experiences and failed to provide an alternative framework for transitioning to virtual classes in the future where the educational institutions could be confronted by a similar crisis as that of the COVID 19 pandemic, with an adverse impact on the education based on physical class modes. It was against this backdrop that this study aimed to both explain the students' experiences and develop a framework for transitioning to virtual classes. More so, studies concur that a transition from physical to virtual classes can only be effective if it is well-designed and carefully planned (Aguilera-Hermida *et al.*, 2021).

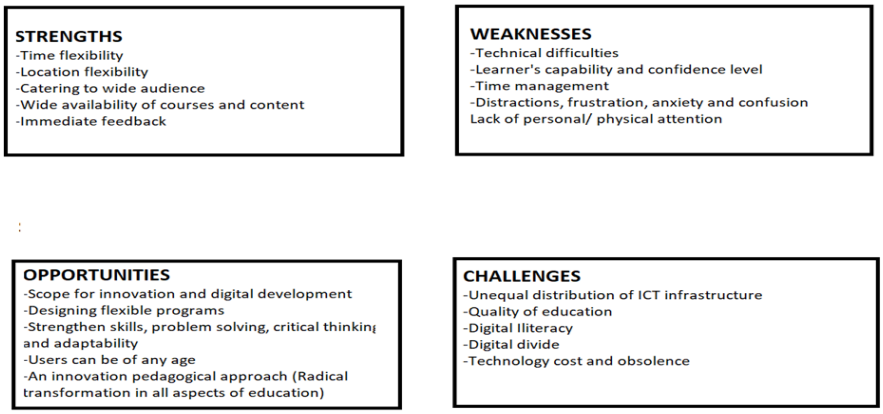


**Figure 1:** The SWOC analysis of online learning during such crises. Adapted from (Dhawan, 2020)

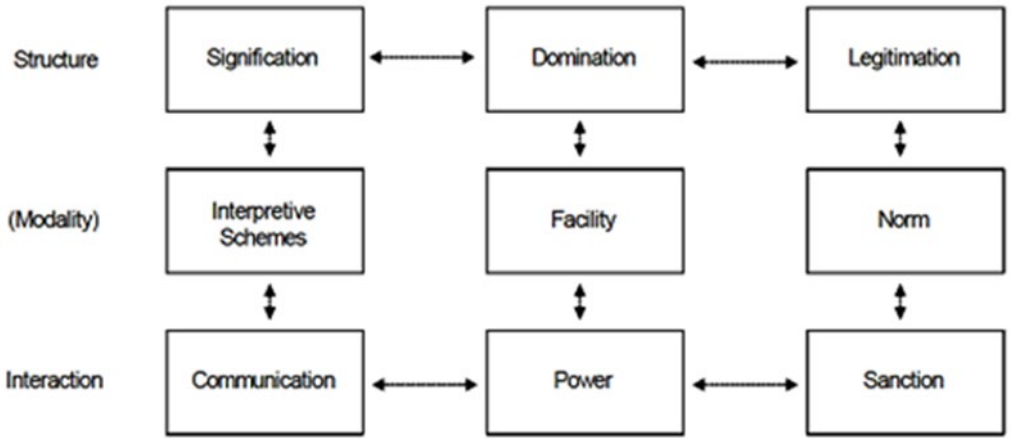


**Figure 2:** The structuration model (adapted from Giddens, 1984)

Figure 2 shows that there are structures of signification, domination, and legitimation, which through the modalities of the interpretive scheme, facility, and norm can either promote or inhibit the interaction of actors. On this note, this study explains how the structure's signification, domination, and legitimation either benefitted or challenged the university students' participation in virtual classes during COVID-19. To achieve this goal, a closed-ended questionnaire was developed and sent to students as a Google form via email. The

questionnaire was four main sections relating to the demographic information, a section on the benefits of virtual classes, another section on the challenges of virtual classes, and lastly a section on the recommended mode of education. Based on Gidden's (1984) concept of the duality of structure, it was confirmed that there were structures of domination that had the power to either facilitate or inhibit the effectiveness of virtual classes. These structures are revealed in the next section on findings.

## 4. Methodology

Quantitative data for this study were collected from a single university case in Zimbabwe. Data were randomly collected from a cohort of students enrolled for the Bachelor of Science in Computer Science and the Bachelor of Science in Informatics. It was easy to access and collect data from this cohort because one of the authors teaches courses taken by the students enrolled in those two programs. Data were collected between July and August of the academic year 2021-2022. The participants were drawn from those registered for the second and fourth levels as they are the ones who had experienced online learning from 2020 to 2022. The students in level one and level three were excluded from the study because those in level one did not have much experience in online learning while those in level three were on industrial attachment, with limited involvement in the education activities. Although 200 responses were expected, only 150 questionnaires were fully completed and analysed using Microsoft Excel. The variance could have been influenced by a lack of access to the questionnaire since it was shared during the vacation and some students reside in rural areas where access to the internet is a challenge. The collection of data for this research was guided by the major concepts of Structuration Theory. According to Giddens (1984) there exist structures that both facilitate and hinder human actions. There are structures of domination, structures of signification, and structures of legitimation, which are all shown in Figure 2.

## 5. Findings and discussions

This study sought to explain the experiences of university students' participation in virtual classes during COVID-19. These experiences were divided into how university students benefitted and were challenged by structures of domination, legitimation, and signification as they participated in virtual classes. The subsequent sections present both the benefits and challenges of participating in virtual classes during COVID-19. The section concluded with the suggested recommendations for improving the rate of transitioning from physical classes to virtual classes in future situations that are as life-threatening as COVID-19.

### 5.1 Benefits of participating in virtual classes during COVID 19

The university students were asked to choose to form a list of items in Table 1, those that they think appropriately described how they think were the benefits of participating in virtual classes during COVID-19. Table 1 presents a list of benefits of online learning that were adapted from Patricia Aguilera-Hermida (2020). The university students had to choose from the list of choices regarding the benefits that they experienced from participating in virtual classes during COVID-19. The findings revealed that top on the list of benefits is "Learning was flexible" chosen by 90 participants.

**Table 1**: Benefits of virtual classes as experienced by university students

| **Benefits of virtual classes** | |
|---|---|
| **Benefits of virtual classes** | **Count** |
| Learning from the comfort of my home was fun | 81 |
| Learning was less stressful | 78 |
| I spent more quality time with the family | 82 |
| I had more time to sleep | 68 |
| Learning was flexible | 90 |
| Incurred fewer expenses | 81 |
| Had more time for my hobbies | 14 |
| I had the inner drive to achieve my goals | 65 |
| I feel that I experienced personal growth | 80 |
| I spent more time on my schoolwork | 67 |
| I had a better understanding of the learning goals | 62 |
| I was exposed to more technological tools | 88 |
| More time with family | 82 |
| More free time | 64 |

| Benefits of virtual classes | |
|---|---|
| **Benefits of virtual classes** | **Count** |
| More control of learning | 70 |
| Better time management | 84 |
| More convenient | 77 |
| I gained new skills | 88 |
| I spent more time on my schoolwork | 67 |
| More time to study | 75 |

These findings concur with existing literature, which acknowledges that e-learning tools provide learners with learning flexibility (Dhawan, 2020; Bdair, 2021b; Korkmaz and Toraman, 2020; Mukhtar *et al.*, 2020; Maatuk, 2022). It was interesting to note that the university students did not find virtual classes to promote their hobbies since this benefit was the least chosen with only 14 respondents who selected it. The overall results, however, show that virtual classes had a positive effect on university students as they indicated that they had more time to study, developed technological skills, they found learning to be fun and convenient among other benefits. These benefits clearly indicate that university students appreciated the intervention of virtual classes when physical classes had become almost impossible. The virtual classes were made possible by the existing structures, which facilitated the continuation of education during the COVID-19 pandemic. These structures included the family structures, which provided the technological, financial, and emotional support needed for successful participation in the virtual classes. The university structures facilitated the environment for online courses. The social structures motivated continuity in the virtual classes. Although these structures facilitated participation in virtual classes, the study also pointed to the challenges of participating in virtual classes, as are discussed in the subsequent section.

## 5.2 Challenges of participating in virtual classes during COVID-19

Like in the case of benefits, the participants were asked to select the challenges from the items listed in Table 2. The research participants identified several challenges that experienced while participating in virtual classes during the COVID-19 pandemic. The challenges included poor internet connectivity, expensive mobile data, lack of good communication with peers and lecturers, distractions from the environment, lack of familiarity with the online learning platforms, etc. It has been observed that many online learning platforms require a connection to the internet. This meant that the student must have access to the WI-FI or use mobile data, which the participants revealed that it was very expensive as is noted in Table 2 that 113 of the 150 participants experienced this challenge.

**Table 2:** Challenges of students' participation in virtual classes during COVID 19

| Challenges of participating in virtual classes | |
|---|---|
| **Challenge** | **Count** |
| Mobile phone data was very expensive | 113 |
| It was difficult to connect to the internet | 102 |
| I could not easily consult with my lecturers | 87 |
| Too many distractions and background noises during online classes | 88 |
| There were too many isolated individual activities and expectations | 13 |
| It was difficult to do the project without direct physical assistance from the lecturer and the teaching/tutorial assistant | 79 |
| We scrambled for the shared internet connectivity with my parents and siblings | 70 |
| I could hardly interact with my classmates | 77 |
| I could hardly interact with my classmates | 107 |
| I missed discussing course topics with my friends | 98 |
| I was not familiar with the online learning platforms and technologies | 65 |
| The lecturers were not audible | 17 |
| I could not visit the library for additional learning material such as books and journals | 77 |
| Course practicals were not well demonstrated during the online lessons | 76 |
| I found my coursework more challenging | 76 |
| I missed more course announcements than usual | 70 |
| I struggled with the use of online discussions | 69 |
| Less classroom interaction | 82 |

This was a significant finding because many students enrolled in undergraduate programs are not employed and they rely on their parents or guardians for financial assistance. Most importantly, like in other developing countries, the economic situation in the country is so bad that despite their willingness, the parents or guardians are not able to provide their children with money to purchase the costly mobile data to connect to the internet to facilitate their participation in the virtual classes. For example, Rahman, Uddin, and Dey (2021) identified costly mobile data and the poor economic situation of Bangladesh to be an inhibitor to the successful implementation of online learning during COVID-19. Similar concerns are acknowledged by Maatuk (2022) and Demuyakor (2020) who revealed that the students from Ghana, a developing country in Africa could not easily participate in online learning during COVID-19 due to the high costs of mobile data. Another challenge of interest that emerged from the collected data regards the boredom that the participants experienced during their participation in virtual classes during the COVID-19 era. This challenge was selected by 107, a 71.3% representation of the participants. This finding is also significant because, before the sudden emergence of the COVID-19 pandemic, the main mode of education in the country's education sector was face-to-face, where learners could attend physical classes and interact freely during or after the lesson. However, due to lockdowns brought about by COVID-19, the learners were to transition to virtual classes, an isolated environment with little or no interaction with both the teachers and core learners. This challenge concurs with existing literature, which shows that students usually find online learning to be boring and less engaging (Salakhova, 2022; Dhawan, 2020; Bdair, 2021; Patricia Aguilera-Hermida, 2020; Rahman, Uddin and Dey, 2021; Baber, 2020). It was however interesting to note that the absence of teamwork was not a major challenge for the research participants since only 13 respondents indicated the need for teamwork. This observation could be attributed to the fact that modern online tools can facilitate work collaboration remotely. It is therefore possible that the students could still work on projects and assignments as a team and remotely. More so another challenge of interest relates to the observation that the lecturers were less audible. Since this challenge was cited by only 13 respondents equating to a low representation of 8,6% of the total participants, this could be rather a problem of the network than a lecturer's problem. When asked to choose the most suitable mode of education, the participants opted for blended learning as it is indicated in Figure 3.

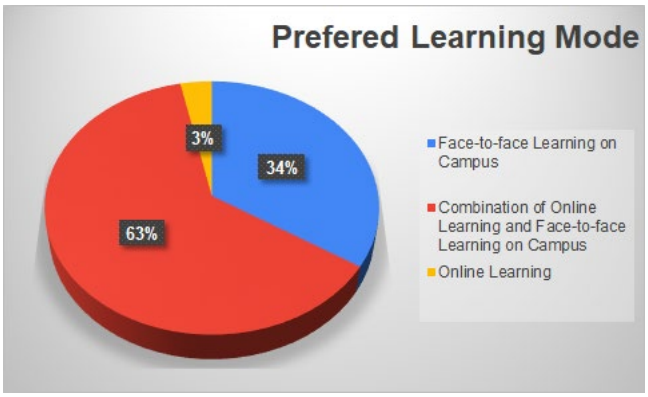


**Figure 3:** The participants' preferred mode of education

The representation in Figure 3 demonstrates that the participants were disappointed in the online learning method as it only had a 3% representation. The face-to-face method was not very popular as it had a 34% representation against the 63% representation of blended learning. It is, therefore, clear that the participants wanted to take advantage of the combined benefits of both face-to-face and online learning. Based on their preferences, the research participants were further asked to recommend strategies for improving the process of transitioning from physical classes to virtual classes. Their contributions are discussed in the next section.

### 5.3 Recommended strategies for transitioning to virtual classes during life-threatening situations

The research participants recommended several strategies that could be implemented to successfully transition from physical to virtual classes. These suggested strategies are demonstrated in Figure 4.

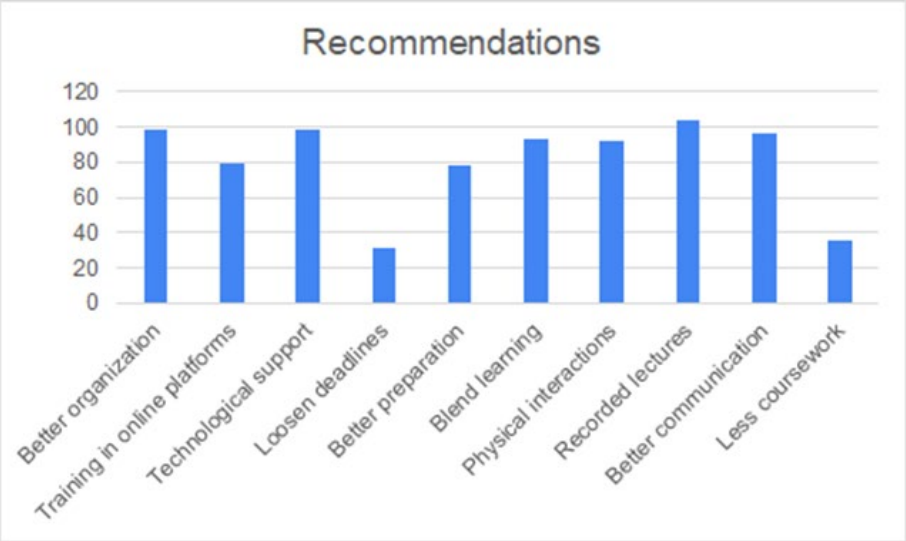


**Figure 4:** Recommended strategies for transitioning to virtual classes

Figure 4 displays the research participants' suggestions on how to improve the process of transitioning to virtual classes. The recommended strategies include better organisation of online learning (65,3%), training (50%), technological support (65,3%), flexible deadlines (20,6%), preparedness (52%), blended learning (62%), physical interactions (61,3%), use of recorded lectures (69,3%), better communication (64%) and less coursework (24%). These suggestions are supported by existing literature. For example, stakeholders' collaboration and cooperation are imperative for a smooth transition to virtual classes (Dhawan, 2020). On a similar note, Adedoyin and Soykan (2020) recommend that educational institutions collaborate with telecommunication industries to either subsidize the cost of internet subscriptions or provide free browsing data to the students and instructors as part of their corporate social responsibilities. Training on how to participate in virtual classes is also key to the success of transitioning from physical classes (Bdair, 2021; Al-Kumaim *et al.*, 2021; Korkmaz and Toraman, 2020). The need for proper organization and preparedness were also supported in existing literature as key aspects for transitioning to virtual classes (Widodo, Wibowo, and Wagiran, 2020; Dhawan, 2020; Mukhtar *et al.*, 2020; Adefuye, 2021). After considering the participants' recommendations and the support for those recommendations that are provided in the literature, the authors of this paper proceeded to propose a framework for transitioning from physical classes to virtual classes.

## 5.4 Proposed framework for transitioning to virtual classes during life-threatening situations

The analysis of both the recommendations of the research participants and the literature resulted in four themes for consideration in the framework for transitioning to virtual classes. These themes included resources, empowerment, adoption behaviors, and leadership, all of which are depicted in Figure 5.

According to Figure 5, Resources for use in the virtual class are influenced by the level of rate of acquisition, allocation, prioritization, and utilization. This means that the more the resources are prioritised, the higher the rate of their acquisition, and the higher the level of allocation leading to an increased level of utilisation. Empowerment depends on autonomy, authority, competence, and experience from using resources required for participating in virtual classes. This means that the absence of those elements hurts empowerment. The behaviours relating to the adoption of resources for participation in virtual classes rely on control, herding, attitude, and resistance. In the absence of resources and empowerment, control of resources is limited, leading to a negative attitude towards those resources, in turn, promoting resistance of virtual classes to result in a herding influence to abandon the virtual classes. It also emerged from the data for this research that leadership plays an important role in the transition from physical to virtual classes. These could be national leaders, institution leaders, or students' representatives. These leaders have a strategic role in the honest communication regarding the use of resources suitable for transitioning to virtual classes, the same leaders have a key role in the motivation to adopt resources and migrate to virtual classes. Those leaders have the power to establish a rapport with the industry and maintain a reputation that compels them to continue supporting the activities necessary for transitioning to virtual classes. The foundation assumption of this research is that a consideration of these key themes is a necessary condition for transitioning from physical to

virtual classes such that the presence of all those elements of the proposed framework could lead to a smooth transition to virtual classes while the absence of any element of the framework could result in a failed attempt towards virtual classes.

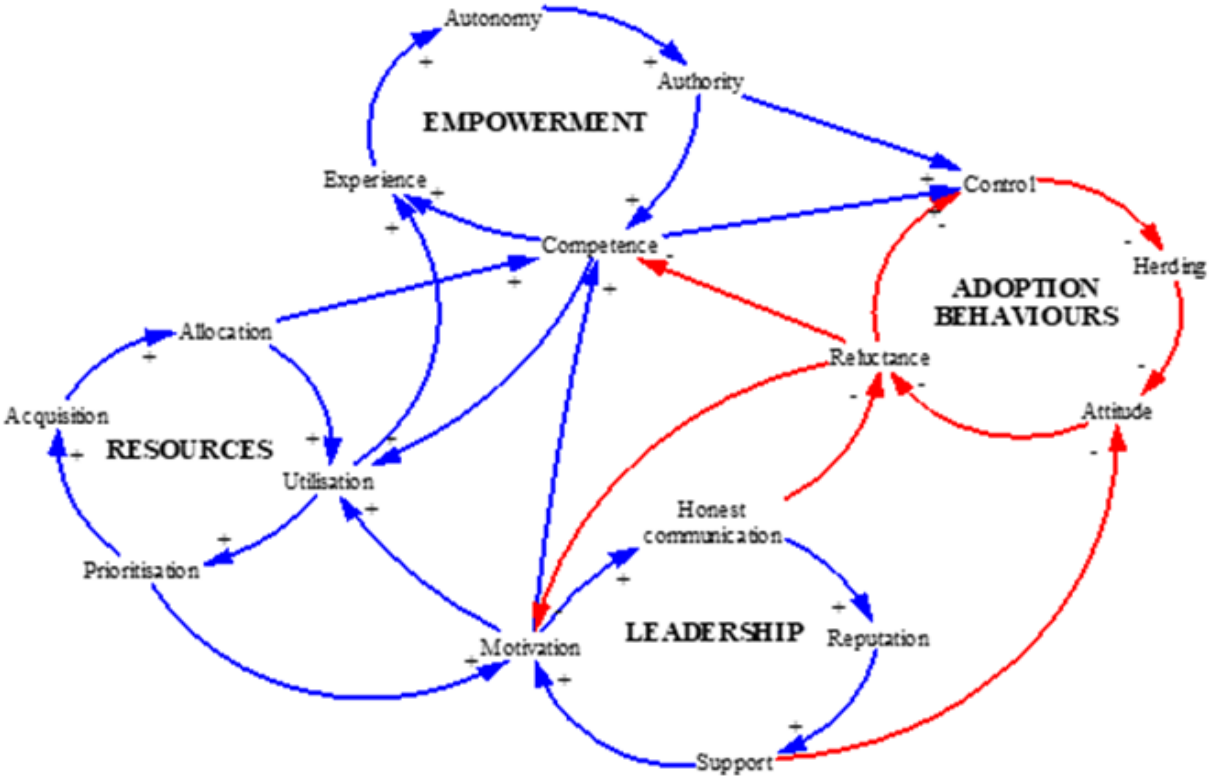


**Figure 5:** A Framework for transitioning to virtual classes, adapted from (Dube, 2020)

Data collection for this research was guided by the duality of structure involving structures of domination, signification, and legitimation (Giddens, 1984). On this note, this research argues *leadership* and *resources* are structures of domination with the power to facilitate or inhibit the transition from physical classes to virtual classes. *Competence* represents structures of signification because the presence or absence of knowledge of how to use resources suitable for participating in virtual classes can promote or hinder the transition towards the virtual classes respectively. Finally, the research concludes that *adoption behaviours* are structures of legitimation because the prevailing norms and moral conduct about education can either sustain the physical classes or motivate the transition towards virtual classes. The findings of this research, therefore, affirm that there exist structures of domination, signification, and legitimation, which either enable or constrain the smooth transition towards virtual classes. An understanding and consideration of these structures can therefore smoothen the process of transition from physical to virtual classes if need be.

## 6. Conclusion

The research sought to explain the experiences of university students regarding the benefits and challenges of transitioning from physical to virtual classes. The findings revealed that while the research participants acknowledged the benefits of virtual classes, they also experienced several challenges, which interrupted their smooth transitioning to virtual classes during the COVID-19 pandemic. The challenges were linked to structures of domination, signification, and legitimation, whose existence hindered the smooth transition to virtual classes. Using the participants' recommendations and literature, the study proposed a framework for transitioning to virtual classes. The components of the framework included leadership, resources, empowerment, and adoption behaviours, which together could improve the rate of transitioning to virtual classes. This research was however limited by a small sample taken from students enrolled in only two programs of a single university case. The research was also based on quantitative data only, which were collected during vacation making it difficult to follow up on students for participation in the research. Future research could expand the sample size and even comparative study based on multiple cases as well as collect

not only quantitative but also qualitative data for more insight into the lived experiences of students' participation in virtual classes during life-threatening situations.

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