



Building a resilient university: ensuring academic continuity—transition from face-to-face to online in the COVID-19 pandemic

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Abstract

In recent times, disturbances, such as pandemics, natural disasters, and social unrest have put universities in unstable situations, affecting educational processes. The duration of unstable situations is unpredictable and can be weeks or years. Despite these disruptions, universities have to continue to fulfil their mission to educate young people. This paper discusses the notion of the resilient university with a particular focus on academic continuity. In order to investigate the migration to online learning under the COVID-19 pandemic and examine student and faculty perceptions and lessons learned, a literature study on resilient organizations and academic continuity and a case study of the World Maritime University (WMU) were undertaken. The case study employed two methods: a focus group (qualitative) and online questionnaire (quantitative and qualitative). The results show that in order to ensure academic continuity and build resilience, the university has to develop anticipation, coping, and adaptation capabilities and act on lessons learned. The research findings revealed the capability of a university in coping with the unexpected challenges and a potential to become a resilient university.

Keywords Resilient university · Academic consistency · Transition from face-to face to online education

1 Introduction

“The art of life lies in a constant readjustment to our surroundings.” Kakuzo Okakura, *The Book of Tea*

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The life and work of every person flipped in 2020 due to the global spread of COVID-19. Most governments have imposed severe restrictions on social gatherings, travel, school, and other activities in order to limit the spread of the virus. According to the World Health Organization (WHO), on April 1, 2020, there were 783,360 confirmed cases of COVID-19 in 205 countries and territories around the world and 37,203 deaths (Marinoni et al. 2020). By November 23, 2020, the number of confirmed cases had increased more than 75 times (59,104,628 cases) and the number of deaths more than 37 times (1,395,694) (COVID-19 coronavirus pandemic, 2020).

Education in general and higher education in particular have been severely impacted by this ongoing crisis. According to the United Nations Educational, UNESCO (2020), over 1.5 billion students, representing 89.4% of total enrolled learners, in 165 countries were out of school in April 2020 due to the COVID-19 pandemic. This unprecedented disruption to education has awakened interest among policymakers, educators, researchers, and the general public in understanding how education systems have responded to the pandemic and how students' learning experiences have changed (Bertling et al. 2020). Moreover, the generally accepted certainty that this disruption will not be the last to have an impact on the continuity of education has led to an interest in the concept of academic continuity and institutional resilience of higher education institutions.

Disturbances such as pandemics, natural disasters, wars, and social unrest are happening with increasing frequency, and with impacts that are unpredictable in nature, duration, scope, and consequence. In the face of these challenges, higher education serves a critical role in society, benefiting both individuals and communities by strengthening social cohesion, ensuring employability of the labor force, and contributing to sustainable development. Higher education institutions are key drivers of UN Sustainable Development Goal 4 (quality education), promoting core societal values such as sustainable lifestyles, human rights, gender equality, and promotion of a culture of peace and non-violence.

Consequently, it is essential to maintain academic continuity despite disruptions to normal circumstances. Educational institutions have to be able to respond to a crisis and continue to provide uninterrupted services through adaptation and adjustment. In this context, the idea of *resilience* as a quality of being able to return quickly to a previously good condition after facing disruptions will become a matter of survival for higher educational institutions. The phenomenon of the resilient organization is discussed by academics (i.e., Wildavsky 1991; Duchek 2020; SchWeber 2013); however, research on resilience in higher education in the context of COVID-19 is insufficient. In particular, little research has been done on the impact of the sudden and unexpected transition from face-to-face to online learning on academic continuity and resilience.

This paper explores the notion of the resilient university with a focus on academic continuity under the COVID-19 pandemic. The objectives of the investigation are as follows: (1) to determine what models may help establish a smooth transition from face-to-face to online learning in maritime higher education, and (2) to investigate how lessons learned from the experience of a sudden transition from face-to-face to online learning can be used to maintain academic continuity and build institutional resilience. The research adopted a case study of the World Maritime University (WMU), a postgraduate maritime university based in Sweden. Traditionally, the main program has been delivered in face-to-face settings. The university has some experience in e-

learning delivery of distance courses, but has limited capacity in terms of staff, equipment, infrastructure, knowledge, and skills. Similar to other higher education institutions, WMU has experienced the transition from face-to-face to online curriculum delivery since March 2020 when COVID-19 became a threat to the general public in Sweden. An online questionnaire as well as a focus group were conducted to collect both quantitative and qualitative data from students and faculty for analysis. The paper first presents the research methods followed by a review of the literature on resilient organizations, resilience models, and academic continuity. The results of the research are presented and the findings discussed in the context of a resilience model before conclusions are drawn.

2 Methods

This paper looked into the notion of the resilient university with a focus on academic continuity in the maritime sector. The research combines a literature study on resilient organizations and academic continuity with empirical research by employing a case study of a maritime higher education institution. A case study approach was chosen as the most appropriate methodology because it allows the investigation of a unique phenomenon within its real-life context involving multiple sources of data (Yin 2003) and aligning the outputs of the different research methods with the research objectives. A case study approach also allows ontological inquiries to look into a specific case to understand the social phenomenon in depth and reality. The case study generally offers “the singular, the particular, the unique” (Simons 2009) while it is argued that it has the potential to see the universal truth (Rule and John 2015).

The case used in this paper is WMU, a postgraduate maritime institution located in Malmö, Sweden, which accommodates approximately 120 mature MSc students from over 50 countries around the world. The students are all maritime professionals employed in the maritime sector, including administrations, port authorities, coast guard, Navy, seafarers, shipping companies, logistic companies, classification societies, and maritime education and training institutions. After graduation, the students are expected to play a leadership role, contributing to their countries in terms of maritime safety, security and clean oceans. The WMU faculty is also diverse with a total of 29 faculty members from 21 different countries. Considering the diverse profiles of WMU students and faculty, studying the case of WMU means a fair representation of different nationalities. Though the sample from each country is small, the data is not biased by certain nationalities or continents. As an exploratory investigation into the impact of COVID-19 on higher education, the case study of WMU is suitable for reflecting diverse experiences and opinions from students and faculty exposed to the transition from face-to-face to online learning.

Within the case study, two complementary methods were used: a focus group (qualitative) and online questionnaire (quantitative and qualitative). This mixed method approach was applied in order to overcome the limitations of the single-case study method, such as inability to generalize the outcomes, and to increase the validity of the process and apply a micro versus macro perspective (Denzin and Lincoln 2018). The combination of qualitative and quantitative data within the case study contributed to a better understanding of the case by providing a more holistic view of the phenomenon studied.

2.1 Focus group

The topic of adaptation of the learning environment from face-to-face to online delivery was a timely topic for all WMU students and faculty. It was a process of constant adjustment and readjustment, and this life experience was an important source of information in the design of the study. To explore the topic and further develop a questionnaire, focus groups were conducted among the WMU faculty. In this study, focus groups were the most practical method to minimize the workload of faculty. Focus groups also allowed the opportunity to share common concerns among faculty, which was also a needed opportunity; hence, the participants were willing to share their views and ideas during the focus group.

In total, 15 faculty members participated in the focus groups in early September 2020. They represented all seven specializations of the WMU MSc program from lecturers to professors. The participants were divided into three groups, consisting of five faculty members in each group. Groups discussed the following topics given by the facilitators:

1. Impact of COVID on the learning environment of WMU
2. Development of e-learning material for the MSc program in Malmö

Approximately 40-min focus groups were held simultaneously to minimize the pressure on faculty from other daily tasks. The obtained data were transcribed and summarized before being organized by emergent categories, which became the foundation for designing the online questionnaires.

2.2 Online questionnaire

The next step after the focus group was to design the questionnaire to further understand the experience of transition from face-to-face to online learning among students and faculty. The online questionnaire was chosen because all students and faculty were restricted from physical meetings under COVID-19 and the most optimal way to collect data appeared to be the online questionnaire.

Ethical approval was obtained from the WMU Research Ethics Committee (REC), and an informed consent was received by each participant. The questionnaires were anonymous so the personal data were not identifiable.

The questionnaire consisted of the following sections: demographic information, adaptation to online learning, preparation and in-class activities, and factors to increase effectiveness of online learning. To examine the impact of COVID-19 on their learning experience, an initial open question asked students to compare their experiences with face-to-face and online learning. For the following questions, a set of items was identified by researchers based on the focus group and 4- or 5-point Likert scales were used. In addition to the closed questions, an option to provide additional information was added to each question, allowing participants to elaborate on their responses.

The online questionnaires were distributed in October 2020. A total of 28 faculty members (including 4 partial answers) and 51 students (including 5 partial answers) completed the questionnaires. Those participating students were close to the completion of their studies and had a comprehensive experience of the transition from traditional

face-to-face to online learning during the COVID-19 pandemic. They had experienced the face-to-face mode from 6 to 8 months¹ before switching to online mode in mid-March 2020 when the pandemic hit many higher education institutions in Sweden. Having been away from their home countries since summer/autumn 2019, the students had been exposed to all facets of the changed situation from academic as well as social aspects.

The student sample represented 44% of all MSc students based in Malmö in 2020. The respondents came from 28 countries from all around the world; most respondents were between 20 and 39 years; 35% were female, and all seven MSc specialization groups were represented.

2.3 Data analysis

A mixed method approach of qualitative and quantitative analyses was adopted in this case study. A focus group was used to explore the topic from the faculty's perspective. The data were categorized by themes, which facilitated the process of designing the questionnaire. The online questionnaires were administered with students and faculty with more comprehensive questions. Descriptive statistical analysis of quantitative data was performed in order to generate an overview of experiences by students and faculty. Responses to open-ended questions were analyzed qualitatively and helped to understand the descriptive statistics and identify repeated themes through content analysis. The analysis of the online questionnaire was then used to verify remarks from the focus group of the faculty's perspectives.

The analysis presented in this paper is based on a synthesis of all data collected for the study as to focus on the resilient university and academic continuity. From the literature review, the authors identified the most relevant and useful resilience model developed by Duchek (2020) (presented under Sect. 3.4 as Fig. 1), which provided a framework for the analysis presented in the Sect. 5.

3 Developing organizational resilience

3.1 Resilience and disturbances

The concept of resilience has been interrogated in a wide variety of research fields. It was initially linked to ecological systems by Holling (1973), who defined resilience as “the measure of the persistence of systems and of the ability to absorb change and disturbance and still maintain the same relationships between state variables.” In the field of psychology, the term has been used, for example, to describe children's responses to traumatic events and was defined by Luthans et al. (2006) as “the developable capacity to rebound from adversity.” Both fields conceptualized resilience as a capacity for recovery after a disturbance which is true to the latin origin of the word, *resilio*, meaning “bounce” or “spring back” Manyena (2006). The word resilience in the context of organizations was first used by Meyer (1982), who used it in the

¹ About one third of MSc students arrive 2 months early to take a preparatory curriculum, called “English and Study Skills Programme (ESSP).”

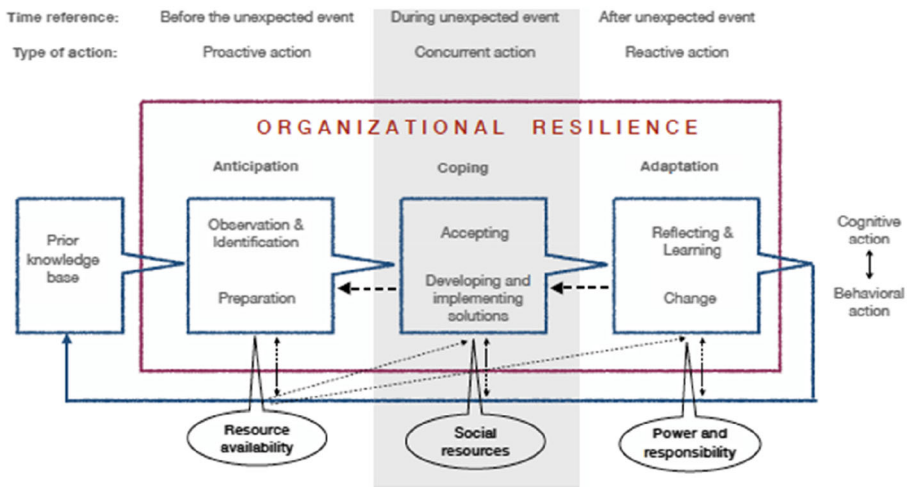


Fig. 1 A capability-based conceptualization of organizational resilience (adapted from Duchek, 2020)

same sense to describe an organization's capability to absorb a shock and return to its original state. Literature exploring organizational resilience in respect of responding to major disruptions has proliferated in recent years, particularly since the events of 9/11 in the USA. An organization's ability to cope with unexpected events, such as terrorist attacks, natural disasters and other internal and external threats, is critical for the organization's stability and even survival (Burnard and Bhamra 2011). The COVID-19 pandemic is currently testing the resilience of organizations, including academic institutions, worldwide.

3.2 Conceptualization of organizational resilience

Early definitions and concepts of organizational resilience were based on the notion from the ecological perspective of recovery from a traumatic event. Resilience in an organization was thus viewed as the capacity or ability to recover from an unexpected disruptive event and return to pre-event status. Wildavsky (1991), for example, defined organizational resilience as "the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back," while Dinh et al. (2012) defined it as "the ability to bounce back when hit with unexpected events." These definitions suggest a reactive or defensive way of responding to a traumatic event with a view to recovering as quickly as possible, and focus on actions taken during the crisis situation.

However, current conceptualizations go beyond this limited perspective to encompass the idea of resilience as creating opportunities from challenges. For example, Vogus and Sutcliffe's (2007) definition of resilience is "the maintenance of positive adjustment under challenging conditions, emerging from those conditions strengthened and more resourceful." Along similar lines, Lengnick-Hall et al. (2011a, b) define it as "more than bouncing back and about turning challenges into opportunities and thereby creating a superior performance than before." This view links resilience with learning and adaptability during and after the event, making necessary adjustments for the long-

term benefit of the organization, including development of capabilities and resources, and using feedback to further build resilience.

For some authors, a key component of a organizational resilience is anticipation. Hamel and Välikangas (2003) point out that strategic resilience includes “anticipating and adjusting to changes that are threatening the core of the organization, and to change before the need to change becomes desperately obvious.” Anticipation in the context of a resilient organization is not limited to forecasting events, which may be impossible, but includes the key concept of preparation. Wildavsky (1991) recognizes the difficulty in predicting disruptive events but highlights the need for organizations to improve their overall capability, which he describes as “a generalized capacity to investigate, to learn, and to act, without knowing in advance what one will be called to act upon.” Preparedness includes activities aimed at expanding knowledge, technical skills and availability and accessibility of slack resources (Wildavsky 1991). These points of view on organizational resilience dispel the notion that resilience is a one-time response to a specific event, but is rather an iterative process that requires pre- and post-event preparation, learning, and adaptation.

3.3 Characteristics, capacities and enabling factors of resilient organizations

A common approach to the study of organizational resilience research has been the identification of characteristics, capacities, and enabling factors that result in resilient organizations and avoid severe consequences from critical unforeseen events. A commonly cited factor is the need for a whole organizational approach to resilience building. Weick and Sutcliffe (2011) argue that resilience depends less on a few individuals and more on the system as a whole. Everly et al. (2013) argue the need for an organizational culture of resilience that promotes growth, provides abundant support and sees a crisis as an opportunity. Such a culture is fostered by organizations that commit to providing the necessary technical and resilience capacity building resources. Making resources (e.g., financial, material, and human) available may seem counterintuitive in uncertain times but organizations striving for resilience must expend resources on not only “what is” but also on “what may be” Hamel and Välikangas (2003). Utilization of slack resources during times of crisis can motivate and engender strong commitment from employees (Meyer 1982). Thus, ensuring the availability of resources is an important step in preparation for unexpected events. However, a necessary corollary is the building of individual and organizational capability to optimally exploit resources when a destabilizing event occurs (Meyer 1982; Sutcliffe and Vogus 2003; Hamel and Välikangas, 2003). Ongoing training and broadening of skills repertoires ensures a competent workforce that is prepared with the necessary knowledge and skills to cope with disruptive events and operationalize resilience.

Successful or unsuccessful responses to adverse events are linked to characteristics and enabling factors that allow organizations to operationalize resilience. During a crisis, usual modes of operation are disrupted and destabilized and new ways of doing things are required. A skill frequently attributed to resilient organizations is bricolage (Weick 1993; Coutu, 2002; Boin et al., 2010). Bricolage refers to the construction of something useful from whatever happens to be available and suggests that in a crisis situation, improvisation and creativity skills are an important source of organizational resilience. Hamel and Välikangas (2003) similarly argue that strategic resilience relies on an organization’s ability to experiment, realign its resources and explore new strategic options.

Several researchers have attributed the difference between resilient and nonresilient organizations to the flexibility of their responses to unexpected events. Meyer's (1982) early study of how hospitals responded to a doctors' strike revealed that rigid responses were less successful than those that allowed flexible use and rearrangement of expertise and resources. Vogus and Sutcliffe (2007) and Andersson et al. (2019) further argued against rigid hierarchical decision-making in times of crisis, suggesting that those with the greatest expertise with the issue at hand should be given decision-making power, while Weick et al. (1999) found that, in a crisis, experts tended to organize themselves in informal, ad hoc networks engaged in problem-solving.

Flexibility was also linked by Sutcliffe and Vogus (2003) to outcomes of positive and negative adjustment. The authors found that rigid responses that conserved resources, narrowed information processing and tightened and centralized control were likely to lead to negative adjustment, while resilient responses that involved utilization of resources and capabilities, loosened control and enabled broader information processing were more likely to result in positive adjustment. Under positive adjustment, an organization emerges from adversity strengthened and more resourceful and resilient than before, having made meaning of the situation and directed its resources and efforts into innovation and capability building.

Strengthening organizational resilience requires a capacity to reflect on and learn from and through challenges and channel lessons learned into new opportunities and strategic directions. Kantur and Iseri-Say (2012) argue that resilience is not the ultimate goal of the organization but is necessary for organizational evolvability by which the post-event organization will emerge improved or even completely distinct from its pre-event state.

Learning is both an input and a result of organizational resilience, with post-event learning increasing the knowledge of the organization and becoming the primary source informing anticipation of and preparation for future events (Vogus and Sutcliffe 2007; Duchek 2020). Such learning is often undertaken by organizations or individuals and groups within the organization through formal or informal post-event reflection practices, such as meetings, research projects and reports, feedback, and discussion among colleagues.

With respect to identifying optimal approaches to learning that enable resilience, Vogus and Sutcliffe (2007) warned against oversimplified interpretations that lead to blind spots and suggested that analyzing failures, even in overall successful events, and analyzing events through different perspectives results in learning that enhances resilience capabilities. Lengnick-Hall et al. (2011a, b) also address the complexity of organizational learning for resilience, which entails both unlearning obsolete information and processes and engaging in iterative, double-loop learning, which contributes to resilience capability and organizational change strategies. Thus, an organization striving for resilience should have the capacity, resources, and human capital to engage in the type of high-level reflection and learning that has the potential to build resilience and result in organizational transformation that comes from translating knowledge into practice.

3.4 Process models of resilience

Indeed, the characteristics, capabilities, and enabling factors of resilient organizations have been widely discussed in the literature. However, a number of authors have looked at resilience as a process rather than as a product of organizational

characteristics. The process approach has resulted in a number of models of organizational resilience.

Kantur and Iseri-Say's (2012) framework is intended to develop a clear understanding of organizational resilience as a concept based on its sources and outcomes. In this model, organizational resilience is only an intermediary goal, whereas the ultimate outcome is organizational evolvability. The model categorizes sources of organizational resilience, grouping characteristics, and enabling factors (gleaned from the literature) under four themes: perceptual stance (sense of reality and wisdom), contextual integrity (employee involvement, compatible interaction and supportive environment), strategic capacity (resource availability, employee capability, focused strategy), and strategic acting (creativity, flexibility, proactiveness). According to the model, the four categories of sources combine to create a resilient organization, which the authors conceptualize as having four components, robustness, redundancy, resourcefulness, and rapidity. Finally, and as the ultimate goal, resilience leads to outcomes (recovery, adaptation/continuity, and renewal) that contribute to organizational evolvability. The model proposed by Kantur and Iseri-Say (2012) focuses on the antecedents and outcomes of resilience but is not iterative. It does not account for the impact on organizational resilience in the absence of one or more sources, nor does it address the impact of achieving organizational evolvability on the factors.

A conceptual framework for organizational responses was conceived by Burnard and Bhamra (2011). The framework seeks to characterize the response of an organization to a disruptive event by outlining the processes required to bring about a resilient response. The model begins with the event, followed by a critical period of threat detection and response activation. A response, which can lead to either positive (resilient response) or negative adjustment is operationalized, and the final stage is organizational learning which feeds back to the enhanced monitoring in the critical period. The model incorporates learning in an iterative process, but does not indicate the organizational capabilities required at each stage.

Duchek (2020) proposes a process model based on a conceptualization of resilience as effectively responding to adverse events, not only after said event, but before and during. The model combines three successive but interacting stages (anticipation, coping, and adaptation) with underpinning capabilities and enabling factors required for resilience at each stage. Anticipation refers to cognitive (observation and identification) as well behavioral (preparation) activities aimed at proactively anticipating events and preparing for them. An organization's existing or prior knowledge base is the key antecedent informing this phase. The following and overlapping stage is coping, wherein organizations operationalize resilience plans and mobilize resources to implement solutions. Here, social resources are an important underlying factor, in particular a shared vision and goals as well as positive collaboration toward coordinated action. The coping stage provides opportunities for learning, thus providing fodder for reflection in the adaptation phase. Organizations have the potential to learn from successes and failures in the coping phase, providing feedback to inform further coping strategies and capabilities and ultimately building the knowledge base to build resources and strengthen capabilities in the anticipation phase. According to the model, in order to realize a high level of organizational resilience, resilience capacity must be built at each stage and each stage must both contribute to and learn from the others.

Duchek's (2020) model can potentially be used by organizations facing disruptions such as the COVID-19 pandemic to better understand the complexity of organizational resilience. Organizations coping with crises can locate themselves in the model, learn from their successes and failures and identify organizational strengths and weaknesses in respect to resilience capabilities at each stage. On that basis, Duchek's model provides a framework for the interpretation and discussion of the results of this research.

4 Academic continuity and resilient university

4.1 Academic continuity

Teaching and learning are the core activities of an academic institution; hence, the concept of academic continuity is strongly linked to institutional resilience. SchWeber (2013) identified it as one of the four functions of institutional resilience. The definition of academic continuity most frequently cited in the literature is that of the Online Learning Consortium (formerly the Sloane Consortium): "the process of maintaining continuity of learning in a crisis situation caused by a natural disaster, human induced (human-made) disaster, or other precipitating factors. It is the extent to which operations can be sustained which enables affected faculty, staff and students to continue academic activities during the response and recovery phase despite the disruption caused by the crisis" (as cited by Bates, 2013). The concept of academic continuity has received renewed attention in the midst of the COVID-19 crisis and its associated disruptions to the ability of academic institutions to maintain the usual modalities of instruction, but it is not a new concept.

In recent decades, a number of events have given rise to institutional responses aimed at maintaining their ability to continue to provide instructional delivery despite disruption to normal activities. SchWeber (2008, 2013) documented recent examples of academic continuity planning in response to various disruptive events such as wars and natural disasters. For example, the redesign of an Empire State College (New York) residency program in Lebanon used multimedia approaches to distance learning when the 2006 war in that country precluded onsite classes. Partners in the residency program moved quickly to establish the virtual residency, which continued until the end of the conflict. A similar response was enacted by Xavier University (Louisiana, USA) in 2005 when Hurricane Katrina caused severe damage to the university and forced the evacuation of many staff and students to other states. To allow students to continue their studies regardless of their location using the Sloane Foundation online courses, a database of approximately 150 courses developed and contributed by various academic institutions countrywide. The university also used technology to maintain ongoing communication with students. When classes resumed on campus in 2006, the university had managed to retain 75% of its 2005 enrolment. These examples indicate the need of continuity strategies at higher educations in order to adequately respond to the unforeseen disruptive situations and build their resilience.

SchWeber (2008) examined the continuity strategies used in the two cases described and found that they contained key characteristics of resilient organizations, namely adapting to the situation and problem-solving; expanding on existing resources, and

quickly making and implementing decisions and managing effectively in situations of uncertainty. The actions of the universities allowed them to maintain academic services with minimal interruption during a disruptive event and restore normal operations without suffering reputational damage.

Research on academic continuity planning in response to and anticipation of pandemics was prominent in the literature during the 2009 H1N1 pandemic. Many authors focused on the development of alternative online modalities for teaching. Young (2009) reported on the plans and preparations of several community colleges to shift much of their teaching online, including online teaching workshops and the production of quick start guides for faculty. Canada's Algonquin college established an academic continuity plan organized around maintaining four categories of support for students: (1) proactive orientation activities, (2) strategies for supporting absent students, (3) use of technology to support learning and assessment, and (4) return to campus support activities. An increasing dependence on online instructional access and technology underpinned each category of support (Bates 2013).

While academic continuity is often equated to the development of online alternatives for instruction, Regehr et al. (2017) describe the University of Toronto's planning for the H1N1 outbreak, which ultimately resulted in the development of a policy and model of academic continuity that go beyond the technological solutions. According to the authors, the policy, successfully deployed in 2014 during a labor dispute disruption, outlines "practices that support resilience in programming, ensure coordination and consistency across the institution, and recognize the critical importance of communication." Similar principles are highlighted in the recent work of Dohaney et al. (2020), which identified the importance of effective communication channels and a coherent communication strategy as the top two characteristics of resilient institutions, followed by an established, coherent learning and teaching disruption plan across all levels of the institution and a strong resilience-building leadership.

Facing disruptive events such as those described above has prompted a great number of educational institutions to develop academic continuity models. The four-phase model described by Regehr et al. (2017) begins with a pre-planning phase, which includes designing resilient courses and developing the required technological systems. This is followed by phase 2, approaching the crisis, which involves communicating policies and best practices and activating the institution's continuity committee. In the third phase, courses are modified and, finally, after the crisis, strategies are reviewed and courses are designed for resilience. Regehr et al.'s (2017) model has similarities to academic resilience models based on the widely used four phases of comprehensive emergency management: mitigation, preparation, response, and recovery. SchWeber (2013) identifies academic continuity as one of the four functions of institutional resilience (along with campus safety and security, business continuity and operational continuity). She notes that all four functions should be considered at each phase of emergency management. In regard to academic continuity, this might involve, at the mitigation and preparation stages, providing guidance and training faculty in online teaching and use of learning management systems. The response stage builds on the work done in the two initial stages and focuses on maintaining the continuity of essential functions such as teaching and learning, while the final stage, recovery, supports the return to normal academic activities. Academic continuity plans are necessary to provide faculty and students with a comprehensive framework that allows

them to be prepared to respond effectively to a crisis and to continue academic activities with as little interruption as possible.

Today, a great many universities have developed and communicated academic continuity plans and policies designed to guide planning and decision making in the event of a crisis. A cursory Google search of the phrase “academic continuity” leads to countless university websites containing academic continuity plans and processes, which include elements such as student and faculty tools kits (University of South Florida), best practices and resources for online teaching for faculty, including group and one-to-one training webinars (Pepperdine College), schedule of training and workshops for faculty; table of instructional tasks with links to recommended technology tool solutions (Loyola University). These initiatives indicate support for staff by their institutions to be able to access and use new technological tools and to undertake new teaching modalities toward resilience building. Research by Dohaney et al. (2020) revealed perceived benefits of improved academic resilience for academic staff such as being able to focus on learning outcomes rather than course logistics, feeling in control, being better able to support colleagues and students and knowing what to expect during a disruption. In contrast, the researchers found that major barriers to resilience were perceived by staff to be lack of time; lack of institutional mandate, buy-in and acknowledgement; poor staff and learner digital literacy; and lack of cohesive and nurturing institutional community.

4.2 Transitioning from face-to-face to online learning

Building a resilient university is part of the development of educational systems and academic life, which is being continuously influenced by sociocultural, technological, and environmental changes. Many universities were forced to make a transition from face-to-face to online delivery of academic activities during the COVID-19 pandemic. Online learning is often described as e-learning. Though e-learning refers to a pedagogical method, the two terms (e.g., online learning and e-learning) are used interchangeably.

Before the pandemic many educational institutions were involved in e-learning to a lesser or larger extent. However, for some educators teaching online was a relatively new concept, for example, in Ireland 70% of staff who teach reported that they never taught in a live online environment prior to the COVID-19 pandemic National Forum for the Enhancement of Teaching and Learning in Higher Education (NF) (2020). The pandemic forced educational institutions to shift suddenly in their approaches to teaching, learning and assessment and to critically reflect upon their current practices. Aspects of e-learning most affected by the transition during the COVID-19 pandemic were discussed in academic publications recently. For example, Knysh and Dudziak (2020) highlight the major relevant challenges for Ukrainian agricultural universities in the pandemic period: access to relevant ICT infrastructure, methodological support and academic staff training. Marshall et al. (2020) discussed the issues that higher educational leaders were confronted with: equity, access to technology, teacher training, resources, financing, and the well-being of students and staff. Watermeyer et al. (2020) investigated the experience of higher education institutions during digital transitioning and highlighted the work-intensification issues for educators, raised the mental health concern for students and academics, focused attention to the importance of developing

digital pedagogy skills and doubted the idea that learning could be enhanced or facilitated by intensifying investment in technologies.

5 Results

This section presents the results of the data analysis from a focus group with the faculty and online questionnaire with students and faculty. In order to examine their experiences of learning and teaching under COVID-19 in terms of resilience and academic continuity, Duchek's (2020) process model of resilience is used. The model includes three resilience stages: anticipation, coping, and adaptation. These stages may overlap in periods and are dependent on each other.

5.1 Anticipation stage

Through the questionnaire and focus group, students and faculty shared their perceptions and experience in regard to the institution's preparedness for the shift to learning and teaching online. In terms of providing quality education, both physical and technological infrastructure as well as technical and pedagogical competences are required. According to the questionnaire, students reported different levels of preparedness for the transition of studies from face-to-face to online in terms of both physical resources and competence. The majority of students stated that they had access to the required infrastructure, including a reliable PC and Internet connection, with 87.2 % and 76.6% of respondents, respectively, indicating that they were "very well prepared" or "well prepared." Students felt less prepared in regard to the suitability of their work space for online learning, with 63.8% of reporting access to a workplace free from disturbances and 61.7% considering their workplace to be ergonomic. A majority of students rated their general technical competences highly, with 68.0% feeling very well or well prepared in this respect; however, given the rapid migration to online learning, just over half (55.3%) indicated familiarity with the Zoom video conferencing platform that WMU adopted for online learning.

Student responses indicate that support for their readiness to participate in online learning could have been better supported by the university. In response to the questionnaire, student participants identified various communication channels and additional support that would have been helpful to prepare them for online learning and develop the necessary competences. The following types of preparation assistance were suggested: an introduction session (72.4%), practical workshops on how to use the operation system (59.6%), written instructions (57.5%), oral guidance (55.3%), discussion with faculty (53.2%), technical support (53.2%), and published FAQ (44.7%).

Despite the overall readiness to work online in respect of physical infrastructure, technological issues were highlighted by some students. Twenty-three respondents reported Internet connection problems during teaching sessions; six students noted problems with sound; three indicated problems with laptops; and one respondent mentioned that their work space was not ergonomic: "The Wi-Fi at the residence, particularly in my room, is horrible so I had to be connected with an ethernet cable all the time which was far from ideal especially since the ethernet cable location was far from my desk." Additionally, a small number of student respondents suffered with

unreliable computers, which compromised their learning environment: “There were times that students had problems with their personal devices to use in their rooms to access their classes online or materials. In such a situation, students rely on computers provided by the university. However, where these computers are stationed has tables and chairs which means other students can be there for discussion and so forth. As a result, it is difficult and disturbing for students to use computers while others are discussing behind them.”

Based on the focus group discussion, at the other end of the online class, faculty experienced similar challenges to students in terms of resources, support, and competences. In the initial shift to online learning, a number of faculty members experienced a lack of access to the necessary resources in respect of technological tools and appropriate work spaces, as summarized by one respondent: “I tried to deliver a lecture from the classroom. I needed to carry a PC, materials, camera, microphone, from the office. It may not match the setup of the existing classroom. In the future, all the six classrooms need to be set up. It should only take 5 minutes to set up. I cannot rely on my own camera etc.” For some faculty members, a large amount of time was spent on getting technological infrastructure in place and trouble-shooting technical problems without adequate support. Issues such as voice lags, microphone and video issues and dropped Zoom connections disrupted teaching. These problems were exacerbated by inconsistent availability of technical support, as expressed in two quotes from faculty respondents: “I think what did not work not so well in the beginning was a kind of tech. support”; “The administrative back up, the technical support that is missing”. In addition to technological access and support, some faculty members felt underprepared to deliver quality teaching due to a lack of familiarity and competence with online tools, in respect of both, (1) the tools provided: “I would need a skilled person introduce Zoom teaching for me and that I have a chance to try the platform before the lecture,” and (2) those that they would like to access to support their preferred pedagogical methods: “I don’t know what technologies are out there that may help me more effectively engage with students online.”

A significant concern was shared among many faculty members who felt ill-prepared due to insufficient experience and lack of confidence to move their teaching online. Faculty were specifically concerned with their perceived lack of training in the pedagogical aspects of online teaching: “I would like training that introduces ideas on how to effectively maximize learning in an online and/or hybrid environment.” Several faculty respondents wondered about the pedagogical implications of the shift from face-to-face to online teaching. Many expressed a desire to learn tips and best practices from experts to maximize the benefits of online teaching while minimizing the challenges and helping students achieve learning outcomes: “We need a lot of pedagogical engagement, there are technological issues obviously, but the key stress is pedagogy.”

5.2 Coping stage

Students and faculty described how they responded to the changes brought on by the rapid shift in modality of the delivery of WMU’s educational program in order to maintain academic continuity. Once the decision was made in response to the worsening pandemic to close the University to students and move all teaching online, faculty

members were required to adjust and adapt their teaching, while students were tasked with coping with a new learning environment and modality. In response to questions, both categories of respondents focused mainly on the challenges they faced in coping with the unexpected migration to online teaching and learning.

One common challenge noted by students was the negative impact of their new learning environment on their learning process, in particular on their ability to maintain their concentration and avoid distraction from academic activities. While the university was closed to students, they were required to follow classes online from their rooms in the university residence or, in some cases, from their home countries. According to the students, studying alone in a nonacademic environment made it difficult to focus on educational activities, partially due to distractions in the learning space, such as noise and cooking smells, but also due to their tendency to multitask during online lectures. Students reported that blurring the division between the home and study environment negatively impacted the separation of academic and personal activities. As a result, 76.6% of students admitted that they engaged in activities such as chatting with friends, using social media, taking calls from home, cleaning, cooking and eating, at least some of the time. In response to a question asking how long they were able to maintain their concentration on online classes, the average reported duration was 39.6 min (st. dev. 17.0). In contrast, most classes delivered online at WMU consist of two 90-min sessions with a 30-min break in between.

The most significant challenge of online learning in comparison to face-to-face appeared to be *community building* in the process of learning. In response to the questionnaire, many students focused on the negative impact of the lack of interaction with colleagues, professors and staff, in particular on their learning process. Many students noted the importance of interaction to their understanding of the subject matter, “during face-to-face learning, I can interact with my professors and colleagues more easily and effectively so that it enables me to collect more information and helps me to understand the subject”; and to their attention span and ability to concentrate, “face-to-face ensures that students are totally engaged in the discussions while in Zoom, the possibility of students attention being diverted is very high.” Others noted the limitations that online learning placed on their ability to engage in practical, hands-on-training: “In my specialization, software such as crystal ball and python need hands-on, face-to-face training.” The students’ challenges were mirrored in the faculty’s responses on community building.

During the focus group, faculty also highlighted that interaction with students is crucial to the learning process. Faculty often found it more difficult in an online setting to engage students in collaborative learning activities and to develop a sense of community in their classes. Many found that in attempting to cope with the change in teaching modality, they found themselves initially falling back on a more didactic, transmissive approach to teaching. One faculty member described the change in quality of communication that took place in the shift to online teaching, noting that the engagement between the teacher and the students “becomes more monologue than dialogue.” Others found it difficult to maintain their usual student-centered approach to teaching: “My normal approach is to work actively with students - how to transfer that online is daunting.” Many others noted that the reduced ability to see and engage with students online resulted in a lack of critical feedback in terms of knowing whether students were following, understanding and learning from their lectures. In the words of

one respondent: “If you cannot look at them, you cannot understand from their body language if they are with you or not.” As a result, faculty noted that adjustments had to be made to supplement online classes with additional learning and social activities, such as providing opportunities and platforms for students to meet each other or meet with faculty outside of class time.

5.3 Adaptation stage

The initial stages of coping with the impacts of the pandemic on teaching and learning were largely spent coming to grips with the disruption to familiar ways of teaching and learning, and trouble-shooting problems. However, as the situation persisted, faculty and students were increasingly able to reflect on and learn from the challenges they faced. In the questionnaire and focus group, they reported how they adapted their thinking and behavior as a result of their experience.

Students’ reflections on the challenges they faced in regard to maintaining their concentration in online classes led to a number of suggestions as to what could be done to increase concentration and minimize distractions. Students suggested reducing the duration of class time between breaks, “every 45 minutes we should have a break for 5–10 minutes,” and recommended that faculty require students to keep their cameras on throughout the duration of the class to reduce, “mandatory turning-on the video,” “students should not be allowed to turn-off their video during lectures.” Many students also suggested that incorporating interactive elements into lectures would not only increase their attention but promote learning through collaboration and discussion with faculty and student colleagues.

When faced with the almost overnight shift to online teaching, faculty members relied on an ad hoc combination of their own and university provided resources to facilitate the uninterrupted delivery of their classes. Essentially, faculty focused on doing what they could with the tools available to them. The lack of preparation time meant that initially more time was spent trouble-shooting the technological issues described in the previous sections than developing digital competences. However, with more experience, experimentation and trial and error, some faculty members were able to better assess, understand and articulate their requirements in terms of technological resources, resulting in a number of suggestions aimed at improving the institution's technological capacity for online learning. Examples include the following: *classrooms converted into dedicated e-labs with proper microphone, webcam and recording facilities; a standard portable e-learning lab made available to each teacher; and a standard online engagement technology set in every office, including a decent camera, microphone and input device for writing on the screen.* One member of faculty recommended a “comprehensive evaluation of our infrastructure for online (and hybrid) teaching as well as the training needs of the faculty with regards to the outcome of the infrastructure evaluation.” Almost all faculty members stressed that, in addition to an enhanced technological infrastructure, reliable dedicated IT staff assistance was critical to supporting and sustaining the delivery of academic programs online.

As with technology, going through the coping stage required faculty members to develop and implement creative solutions to pedagogical issues, such as those described in the preceding sections. Many of the faculty respondents realized early in the transition that they could not simply transfer their face-to-face teaching methods to the

digital platform. As one person explained, “to teach effectively online, one cannot simply replicate what was done in the classroom”, and another elaborated, “content delivery needs to be adapted and well framed. You need to spend more time on the preparation and adaptation of the lecture notes including quizzes, discussion points, breakout room discussions, etc.” Faculty members reported making continuous adjustments to their online teaching based on ideas from more experienced colleagues, feedback from students, online sources and adapting traditional classroom activities to the online environment. Others used the period to experiment with new techniques and reflect on what was working and what was not working to refine their approaches to online teaching. In the focus group, participants discussed and shared tips and strategies for effective online teaching based on this experience. Several addressed the issue of optimal lecture time, “avoid long lecture times; lecture for a maximum of 30 minutes and switch to other learning activities,” while others focused on creative strategies for maximizing student engagement, as highlighted by the following two recommendations: “Set up a discussion forum dedicated to personal interactions (i.e., “Student Lounge”). Peer-review activities and group activities blending online and onsite students. Set clear expectations for individual contributions in hybrid group activities” and “Minimize lecturing and maximize student interaction. Possibly reconsidering time online, reducing teaching activities and promoting study time or involvement in group or individual work beyond time with the professor.”

Despite the challenges encountered in the process of the rapid transition from face-to-face to online learning during the first stages of the pandemic at WMU, the focus group and online questionnaire data show that academic continuity was achieved. The students noted that the transition from one mode to the other was made quickly and effectively in a short time due to the “huge efforts of professors” and “WMU taking needed actions”; 8 respondents mentioned that online learning was as effective as face-to-face: “basically, offline and online are the same,” “the zoom lectures were effective as class lectures”; 7 respondents highlighted that in the COVID-19 pandemic situation the online education was the most optimal way to organize learning: “it was the best option to take,” “though having in mind the circumstances that we faced this year the transition from face-to-face learning to online learning was the best choice.”

6 Discussion on implications to resilient university

This section provides discussion of the results of the empirical research from the perspectives of the process model of resilience (Duchek, 2020), consisting of anticipation, coping and adaptation capabilities.

6.1 Anticipation capabilities

Anticipation capabilities are related to preventive actions in case of disturbance and minimizing negative consequences (Madni and Jackson 2009 as cited in Duchek, 2020). The main characteristics at this stage are ability to (1) observe the evolution of potential events inside and outside the organization, (2) identify critical issues and potential threats, and (3) be prepared to continue activities in a risky environment.

A major disruptive event such as the COVID-19 pandemic is almost impossible for any organization to predict. However, WMU took early measures in anticipation of intensification of the crisis. A key initiative was setting up a Crisis Management Committee, to follow the evolution of the threat and its potential impact on academic continuity, the most likely threat being the closure of the campus to students, necessitating preparation of alternatives to face-to-face classroom teaching. According to Duchek's (2020) model and the research it draws from Meyer (1982), Hamel and Välikangas (2003), and Sutcliffe and Vogus (2003), preparation is a key component of the anticipation phase. A resilient organization is one that makes resources (financial, material, and human/social) available and builds, through ongoing training and professional development activities, individual and institutional resilience capabilities. An academic institution with high level anticipation capabilities has at its disposal a metaphorical toolkit to draw on in the face of disruptive events that threaten academic continuity.

In respect to the preparedness to continue teaching and learning activities, the research findings from the perspective of students show that most had the necessary material resources to continue their learning online. However, a key finding was that a significant number of students lacked the necessary competences to optimally use the resources, suggesting that familiarization training with technical tools could improve resilience at the anticipatory stage. From the faculty perspective, there were two commonly reported issues in terms of readiness to operationalize online teaching. One was a perceived lack of support in ensuring the technological infrastructure was in place to enable the smooth transition to teaching online. Dealing with this aspect of preparation took time away from critical pedagogical aspects. An organizational culture of resilience as envisaged by Everly et al. (2013) is based in part on the provision of abundant support. This idea is realized in Academic continuity models, such as the one developed by the University of Toronto that provide clear frameworks in terms of roles and responsibilities during a crisis. Having such a framework in place could facilitate the operationalization of resilience capabilities. A second issue in respect of preparedness was based on lack of experience in delivering online classes, suggesting the need for academic continuity planning that provides technical and pedagogical training in using new modalities for teaching. These new capabilities will be drawn on in the coping phase (through bricolage), but also contribute to strengthening institutional resilience overall. Newly developed capabilities can be exploited after the crisis in respect of identifying new opportunities and strategic directions as intended under the conceptualization of resilience that goes beyond merely recovering from a crisis.

Another theme that emerges from the research in respect of preparation is communication, Lengnick-Hall et al. (2011a, b) emphasized the need for continuous communication in times of crisis to enable members of an organization to share information and stay informed in order to be able to act appropriately in times of disruption and destabilization. Dohaney et al. (2020) identified effective communication channels and a coherent communication strategy as the top two characteristics of resilient institutions. In the case of technological tools in the transition from face-to-face to online teaching, it is important that all organizational members know what tools are available and how to use them. The results of this research indicate that while students were provided with tools such as Zoom conferencing, communication about the use of these tools was insufficient. Faculty members expressed not knowing what tools were

available for online teaching. Effective communication, both formal and informal, in the anticipation stage can promote access to a wider range of coping options and contribute to the smooth implementation of coping strategies by promoting a community approach to sharing resources, expertise, experience, and best-practices toward strengthening individual and organizational capabilities for academic continuity and resilience. These learning practices could have a positive impact on institutional adaptability and growth.

6.2 Coping capabilities

Coping capabilities are related to short-term actions taken to deal with unexpected events in order to avoid the worst-case scenario and ensure survival. Effective handling of the disruptive event requires: (1) accepting the reality as it is and (2) developing and implementing solutions through immediate or short-term action (Pearson and Clair 1998; Duchek 2020). The ability to properly apply the process of “bricolage” (Weick, 1993; Duchek, 2020) is considered as the main capability of a resilient organization at this stage.

During the initial stages of the impacts of the pandemic, WMU focused on immediate actions to maintain the continuity of the university’s academic offerings. Faculty members engaged in ad hoc problem solving, using available resources and existing capabilities to make an uninterrupted transition from face-to-face to online learning. Our research shows that as the shift to online teaching moved beyond the early stages, faculty increasingly refined their online offerings through experimentation and trial and error and by seeking feedback from students. Students, in their part, reflected on how the new online modality impacted their learning and provided feedback to their professors. Through this ongoing process of reflection and action, learning occurred and faculty members built and utilized new technical and pedagogical knowledge and capabilities. Beyond individual learning, faculty engaged in informal learning through discussion and engagement in the type of ad hoc problem-solving described by Weick et al. (1999), and more formal learning took place through their participation in working groups to share concerns and best practices.

In the short term, coping capabilities were utilized to successfully maintain academic continuity under the impacts of the COVID-19 pandemic. This is evidenced by the fact that 119 students completed their studies and graduated from WMU with MSc degrees and the new cohort began their studies completely online. In addition to maintaining academic continuity, our research found that faculty members built individual resilience through reflection, lessons learned and capabilities developed, which will leave them better prepared to face critical events in the future. However, building resilience capability at the institutional level and for the long term requires systemic action in response to lessons learned.

6.3 Adaptation capabilities

Adaptation capabilities are related to the abilities of the organization to (1) reflect and learn from the success and failures and (2) implement organizational change (Duchek 2020). This stage is crucial for the successful development of organizational resilience because it is related to reflection on lessons learned from successes and failures and the

use of those lessons in feeding back to the coping stage and ultimately building the knowledge base and strengthening resilience capabilities at all stages.

The goal of a resilient educational institution is not merely to survive a disruptive event such as the COVID-19 pandemic but to emerge from it stronger and more resourceful (Vogus and Sutcliffe, 2007) by translating lessons learned in the coping stage into new organizational behaviors. To resume the same pre-pandemic teaching and learning models once the crisis has ended would be a lost opportunity. Instead, WMU should consider how newly developed solutions can become opportunities for new learning models, such as blended learning or expanded online offerings which make use of newly developed digital skills and pedagogical capabilities. To best leverage lessons learned toward positive organizational change, feedback from faculty and students should continue to be sought to gain an understanding of which skills and resources are required to enhance the institution's knowledge base and build resilience. Faculty and student feedback obtained in this study in respect of the need for resources, technical support and professional development through training opportunities could be valuable in this respect.

7 Conclusions

Having analyzed the case of WMU against the three stages of Duchek's model (2020) of a capability-based organizational resilience, it can be said that WMU is still in the coping stage, meaning the "effective handling of unexpected events so as to resist destruction" (Duchek 2020). However, the adaptation phase has also been operationalized as various formal and informal reflection and learning practices are being undertaken by individuals and groups within the institution, including the research reported in this paper. It is hoped that the results of such learning practices and processes will provide feedback to the ongoing coping phase as the COVID-19 pandemic continues to disrupt traditional teaching and learning activities and eventually build the knowledge base to strengthen resilience capability in the anticipation phase. If we define resilience as "a meta-capability consisting of a set of organizational capabilities/routines that allow for a successful accomplishment of the three resilience stages" (Duchek 2020), the characteristics of all three resilience stages have been demonstrated during the time of pandemic.

The challenge now is to ensure that critical lessons learned are not lost or ignored, but translated into action toward strategic organizational changes and resilience building. The achievement of academic continuity is a success. However, it would be a mistake to consider this defensive action as the ultimate goal and proof of organizational resilience, especially in light of the view of organizational resilience as creating opportunities from challenges. Organizational change requires a system approach, based on the shared vision, commitment and collaboration of all organizational members at all stages of resilience. In this case study presented in this paper, leading organizational changes can be achieved through increasing the constructive dialog between students, faculty and management in order to understand better the current needs and take appropriate timely measures to increase effectiveness. It is hoped that this research will provide academic institutions an approach to striving to maintain academic continuity and build resilience in a time of disruption and destabilization.

With an understanding of the concept and process of resilience, the underlying capabilities required for a resilient university need to be consciously built from the crisis to build stronger resilience than before.

For future research, since the pandemic has extended even longer than expected, there will be an opportunity to investigate aspects of individual and organizational resilience in depth. Possible topics include, impacts of online teaching and learning on physical and mental health of faculty and students, competences and knowledge transfer and acquiring, new methods of teaching and learning, impacts of new environment on the organizational activities and practices, effects of the taken organizational measures on the resilience of the organization.

References

- Andersson T, Cäker M, Tengblad S, Wickelgren M (2019) Building traits for organizational resilience through balancing organizational structures. *Scand J Manag* 35(1):36–45
- Bates R (2013) Institutional continuity and distance learning: a symbiotic relationship. *OJDLA* 16(3):n3
- Bertling J, Rojas N, Alegre J, Faherty K (2020) A tool to capture learning experiences during Covid-19: a PISA global crises questionnaire module. OECD Education Working Paper Np. 232. OECD: Directorate for education and skills. https://www.oecd-ilibrary.org/education/a-tool-to-capture-learning-experiences-during-covid-19_9988df4e-en. Accessed 23 November 2020
- Boin A, Hart PT, McConnell A, Preston T (2010) Leadership style, crisis response and blame management: The case of Hurricane Katrina. *Public Adm* 88(3):706–723
- Burnard K, Bhamra R (2011) Organisational resilience: development of a conceptual framework for organisational responses. *Int J Prod Res* 49:5581–5599
- Coutu DL (2002) How resilience works. *Harv Bus Rev* 80:46–51
- COVID-19 coronavirus pandemic (2020) Worldometers statistics. <https://www.worldometers.info/coronavirus>. Accessed 23 November 2020
- Denzin N, Lincoln Y (2018) *The SAGE handbook of qualitative research*. SAGE Publications, Inc
- Dinh LT, Pasman H, Gao X, Mannan MS (2012) Resilience engineering of industrial processes: principles and contributing factors. *J Loss Prev Process Ind* 25(2):233–241
- Dohaney J, de Roiste M, Salmon RA, Sutherland K (2020) Benefits, barriers, and incentives for improved resilience to disruption in university teaching. *Int J Disaster Risk Reduct* 50:101691. <https://doi.org/10.1016/j.ijdrr.2020.101691>
- Duchek S (2020) Organizational resilience: a capability-based conceptualization. *Bus Res* 13(1):215–246
- Everly GS, Smith KJ, Lobo R (2013) Resilient leadership and the organizational culture of resilience: construct validation. *International Journal of Emergency Mental Health and Human Resilience* 15(2): 123–128
- Hamel G, Välikangas L (2003) The quest for resilience. *Harv Bus Rev* 81:52–63
- Holling CS (1973) Resilience and stability of ecological systems. *Annu Rev Ecol Evol Syst* 4(1):1–23
- Kantur D, Iseri-Say A (2012) Organizational resilience: a conceptual integrative framework. *J Manag Organ* 18(6):762–773. <https://doi.org/10.5172/jmo.2012.18.6.762>
- Knysh O, Dudziak O (2020) Overcoming the Challenges – the Impact of COVID- 19 on Agricultural Higher Education in Ukraine. *Revista Românească pentru Educație Multidimensională* 12(2):162–167. <https://doi.org/10.18662/rrem/12.2Supl/302>
- Lengnick-Hall CA, Beck TE, Lengnick-Hall ML (2011a) Developing a capacity for organizational resilience through strategic human resource management. *Hum Resour Manag Rev* 21(3):243–255
- Lengnick-Hall CA, Beck TE, Lengnick-Hall ML (2011b) Developing a capacity for organizational resilience through strategic human resource management. *Hum Resour Manag Rev* 21(3):243–255
- Luthans F, Vogelgesang GR, Lester PB (2006) Developing the psychological capital of resiliency. *Hum Resour Dev Rev* 5(1):25–44
- Madni AM, Jackson S (2009) Towards a conceptual framework for resilience engineering. *IEEE Syst J* 3(2): 181–191. <https://doi.org/10.1109/2017397>
- Manyena SB (2006) The concept of resilience revisited. *Disasters* 30(4):433–450

- Marinoni G, Van't Land H, Jensen T (2020) The impact of Covid-19 on higher education around the world. IAU Global Survey Report. https://www.unibasq.eu/wp-content/uploads/2020/06/iau_covid19_and_he_survey_report_final_may_2020.pdf. Accessed 21 Jan 2021
- Marshall J, Roache D, Moody-Marshall R (2020) Crisis leadership: a critical examination of educational leadership in higher education in the midst of the COVID-19 pandemic. *ISEA* 48(3):30–37
- Meyer AD (1982) Adapting to environmental jolts. *Adm Sci Q* 27:515–537
- National Forum for the Enhancement of Teaching and Learning in Higher Education (NF) (2020) Index Irish national digital experience survey: Findings from students and staff who teach in higher education. <https://hea.ie/assets/uploads/2020/05/NF-2020-INDEx-Report.pdf>. Accessed 13 November
- Pearson CM, Clair JA (1998) Reframing crisis management. *Acad Manag Rev* 23 (1):59
- Regehr C, Nelson S, Hildyard A (2017) Academic continuity planning in higher education. *J Bus Contin Emerg Plan* 1(1):73–84
- Rule P, John VM (2015) A necessary dialogue: theory in case study research. *Int J Qual Methods*. <https://doi.org/10.1177/1609406915611575>
- SchWeber C (2008) Determined to learn: accessing education despite life-threatening disasters. *Journal of Asynchronous Learning Networks* 12(1):37–43
- SchWeber C (2013) Survival lessons: academic continuity, business continuity, and technology. In: *Facilitating Learning in the 21st Century: Leading through Technology*. Springer, Diversity and Authenticity. Dordrecht, pp 151–163
- Simons H (2009) *Case study research in practice*. Sage, Los Angeles
- Sutcliffe KM, Vogus TJ (2003) Organizing for resilience. In: Dutton JE, Quinn RE (eds) *Cameron KS. Positive Organizational Scholarship, Foundations of a New Discipline*. Berrett-Koehler, pp 94–110
- UNESCO (2020) COVID-19 and Higher Education: Education and Science as a Vaccine for the Pandemic <https://www.un.org/en/academic-impact/covid-19-and-higher-education-education-and-science-vaccine-pandemic>. Accessed 13 November
- Vogus TJ, Sutcliffe KM (2007) Organizational resilience: towards a theory and research agenda. *IEEE International Conference on Systems, Man and Cybernetics*:3418–3422
- Watermeyer R, Crick T, Knight C, Goodall J (2020) COVID-19 and digital disruption in UK universities: afflictions and affordances of emergency online migration. *High Educ* 81:623–641. <https://doi.org/10.1007/s10734-020-00561-y>
- Weick KE (1993) The collapse of sensemaking in organizations: the Mann Gulch disaster. *Adm Sci Q* 38: 628–652
- Weick KE and Sutcliffe KM (2011) *Managing the unexpected: resilient performance in an age of uncertainty* 8. John Wiley & Sons
- Weick KE, Sutcliffe KM, Obstfeld D (1999) Organizing for high reliability: processes of collective mindfulness. In: Staw BM, Sutton RI (eds) *Research in organizational behavior*. Jai Press, Greenwich, pp 81–123
- Wildavsky A (1991) *Searching for safety*. Transaction Publishers
- Yin R (2003) *Case study research: design and methods*. SAGE publications
- Young JR (2009) In case of emergency, break tradition—teach online. *The Chronicle of Higher Education* 89

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