

v1: 23 June 2023

Research Article

Digital Mapping of Resilience and Academic Skills in the Perspective of Society 5.0 for Higher Education Level Students

Peer-approved: 23 June 2023

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Qeios, Vol. 5 (2023)
ISSN: 2632-3834

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The Covid-19 pandemic has changed the policy of higher education in Indonesia from conventional learning to online. This policy change encourages students to have psychological resilience and adaptability through digital resilience and academic skills. The research method is divided into two stages: qualitatively formulating a measurement construct using an open-ended questionnaire with a total of 137 respondents. Based on the qualitative data, a digital measuring instrument for resilience and academic skills was developed as a 5-choice Likert Scale. The second stage is carried out quantitatively, looking at the reliability and item-total correlation test to select items not aligned with the measuring function using the Statistical Program for Social Science. The trial was conducted on 137 respondents. Based on the digital scale of resilience trials, the results showed that 64.9% of respondents had high resilience, 33.8% had moderate stability, and 1.2% had low strength. While analyzing the items measuring digital resilience and academic skills research, it was found that Cronbach's Alpha reliability value was 0.917. So the measuring instrument for digital resilience and academic skills is reliable and appropriate to be used to explain the condition of students during Covid-19.

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Introduction

The Covid-19 pandemic has forced Indonesia's education system and all its aspects to make significant changes. These changes bring negative and positive impacts by accelerating the transition of the Industrial Revolution 4.0 to the era of Society 5.0, such as the use of Artificial Intelligence and its implementation in many people's lives.^[1] The

presence of the period of Society 5.0 is a great opportunity and a challenge for the world of education, including the learning system that must change from conventional learning to online learning. So it is necessary to increase the capacity and ability of universities, lecturers, facilities, and infrastructure. Students must change towards information technology.^[2]

The learning scheme must change to face the new normal after the Covid-19 Pandemic. Need to innovate learning systems that are starting to change from

conventional learning to digital learning^[3]. The learning process in higher education must shift from the traditional to the online learning process. Hence, universities need to increase the capacity of the online learning system^[4]. However, from the perspective of Society 5.0, the shift in the learning process is an inevitable technological disruption^[5], which needs to be addressed with the ability to adapt to these changes.

One form of student unpreparedness to face the current era of technological disruption is the decline in academic skills and the phenomenon of learning loss during the pandemic.^[6] Another indicator that can be observed is the presence of boredom and fatigue during online learning^[7]. At the level of educational institutions, institutions also need help preparing learning facilities and infrastructure or lectures with digital platforms. Digital learning models that are implemented require a long process that requires valid and reliable evidence-based. Not to mention the problem of describing the condition of digital soft skills and digital literacy. So learning in the era of Society 5.0 requires students and institutions to have strong abilities to adapt to massive technological developments^[8]. This capability is known as digital resilience^[9].

Digital resilience in the perspective of Society 5.0 can refer to the resilience of individuals or institutions against various forms of risk that threatens Society 5.0 in the communication space or digital interaction space^[10]. The conditions of digital resilience include the stages of anticipating, recognizing, and defending against threats present in the digital world^[11]. Digital resilience is significant at the individual and institutional levels, considering the hazards and risks of the digital world that are getting bigger^[5].

Resiliency is not an immutable trait because it is a dynamic process and involves positive adaptation in the face of challenges and difficulties in life^[3]. In addition, resilience is also assessed as a multidimensional condition so that individuals may have different abilities in facing the same form of difficulty^[4]. Every individual is born with the ability to have resilience, so resilience is not spectacular because it is a process experienced by each individual.^[11] Pocetta added that 70% of youth who live in adversity are used to facing adversity and developing their abilities and skills to meet life^[12].

Masten, Best, & Garmezy describe three characteristics of resilience. First is an individual's ability to face problems and adapt to unpleasant conditions; second is the ability to adapt to stressful life experiences. And Third, the ability to deal with situations that have caused trauma, such as natural disasters, the death of close people, or others' experience having an accident^[13]. Hanewald describes three forms of resilience, namely: (1) overcoming the odds, which describes the individual's strength in facing difficulties, (2) coping, the ability to face various forms of adverse risk; and (3) recovery from trauma is the ability to bounce back from adversity or adversity.^[14]

Connor & Davidson added that resilient individuals could face difficulties and adapt positively to adverse events.^[15] Psychologically resilience is the tendency to deal with stress and complex conditions^[16]. Wolin & Wolin^[17] say that strength can emerge after facing difficulties. Adversity can weaken or strengthen an individual depending on how he takes advantage of these challenging conditions. If the problem is painful, it will encourage the individual to be unable to continue his healthy life. However, if they can deal with it well, the difficulty will be an opportunity or challenge that makes them stronger and gain many other abilities.

According to Masten & Reed^[18], resilience has been widely studied as an individual's ability to adapt, deal with stress, and face challenging conditions. Wintre and Yaffe, in a study conducted on 408 first-semester students, showed a significant level of depression at the end of the first academic year^[19]. Entering the world of higher education will trigger a process of academic resilience in which students will experience the intensity of emotional turmoil called disruption. However, students will also share a reintegration stage after the disruption stage where in the end, students can adjust, succeed through all forms of exams, form self-identity, and achieve independence in empowering social, emotional, physical, and academic functions^[20].

ResiliencyAcademically, in higher education, it is defined as the ability to effectively face challenges, difficulties, and pressures in an academic setting^[21]. Students must meet several risk factors, such as low grades, chasing a predetermined time limit, challenging assignments, strict attendance, and the obligation to attend several lecture classes.^[21] In short, academic resilience refers to a phenomenon

described by the ability to achieve good results despite dealing with difficulties in adapting and following academic developments.

According to Wang, Haertel, & Walberg, learners who have academic resilience can turn a complex environment into a source of motivation while maintaining high hopes and aspirations, being goal-oriented, having problem-solving skills, and having social competence.^[22] Alva^[23] adds that individuals with academic resilience can succeed in achieving success in the educational process they undergo, where they struggle in adverse situations and still have the possibility of not growing.

According to Morales^[24], academic resilience is influenced by the beliefs students have about themselves, other people, and the world around them, so resilience departs from the mental health experienced by students. Rickinson^[25] also added that students' coping skills could increase their resilience, motivation, and persistence until they complete their studies.

Marsh et al.^[21] researched academic resilience on a broader psychological dimension and found five factors that could predict academic resilience: self-efficacy, self-control, planning, low anxiety, and persistence. If you want to intervene in student resilience, these five factors must be considered in designing the material. The research's Dass-Brailsford^[26] - in his research on South African youth who have high academic resilience and have achieved academic success - shows that family poverty is indeed a risk factor for them. However, the support from the family they get, family characteristics and role models, and support from schools remain their get. They have high self-esteem, are highly motivated, and have a goal orientation. In addition, they make their teacher a role model and source of enthusiasm. The belief embedded in them is a high power that will provide comfort in their lives in the future.

Brown et al.^[27] also said that the support of the campus environment is related to student resilience. Involvement in academic activities, a positive view of the school, and high self-esteem shape students' academic resilience. Wasonga, Christman, & Kilmer^[28] compared students who had academic resilience and those who did not. The results showed that those with high resilience had high perceptions of achievement motivation, self-satisfaction, involvement, and academic self-concept.

Gonzales & Padilla^[29] suggests efforts that academic institutions can make to provide opportunities for students to develop internal assets and resilience. Bernard^[30] asserts that teaching skills to solve problems will make students resilient and able to overcome difficult situations, which will form independent personalities and undoubtedly lead them to be productive and successful in life. McMillan & Reed^[31] identified several efforts that were measured by students having high academic resilience, namely their involvement in intervention programs and being busy with various activities to use their time positively in college. Have clear goals, and for the short and long term.

McMillan & Reed^[31] added several student characters with academic resilience, namely having strong internal constraints about their lives and having personal responsibility for their actions. They also have role models that are believed to be good to follow. The importance of academic resilience is illustrated by Finn & Rock^[32], that academic resilience is significant in students' academic success. Students involved in campus activities and feel more connected to the campus environment appear to have more academic resilience. Smokowski et al.^[33] added that academic and social involvement are essential to forming student academic resilience.

Finn & Rock^[32] describe that students with academic resilience prefer to work hard, rarely leave class, and rarely experience problems. Wolin & Wolin^[17] added that other academic resilience characteristics are insight, independence, creativity, a sense of humor, and initiative. In short, academic resilience is influenced by several supporting factors, which will be the key to the success of students passing through the academic stages in higher education.



Figure 1. Supporting Factors of Resiliency in Students

Figure 1 shows several supporting factors for resilience that individual students can have. The first supporting factor is a factor from within the individual. Benard^[34] said that every individual has innate genetic resilience, which can be revealed naturally by the presence of several attributes in the environment in which they are located. Several personal supporting factors are problem-solving skills, independence, self-efficacy, social skills, and internal locus of control with a high level of involvement, all of which are considered characteristics of individuals with academic resilience. Problem-solving skills include making plans, processing several alternative solutions in difficult situations, and thinking critically, creatively, and reflectively.

In addition, students also have autonomy; they believe in their ability to influence the conditions around them^[35]. Students with good social competence can certainly interact and accommodate things needed in the campus community. Other abilities that are also personal supporting factors are tolerance for negative influences, self-esteem, and belief in one's abilities. Also, ability to manage the environment and the future, a sense of humor, have lots of expectations, have strategies for dealing with stress, and have positive values. Positive values that are held and believed have a balanced perspective in experience, have grit, tenacity, and be able to resolve if there is a problem.

Pascarella & Terenzini^[36] say that positive self-concept and mental outlook enrich the student experience because they are intrinsically motivated to

fulfill their academic obligations. Bandura^[37] also said self-efficacy has important implications for motivation where students judge themselves to have the ability and effort to achieve academic success. The internal locus of control is an individual's belief about the results that can be completed in this life based on the action done and the abilities possessed^[38]. Other figures, namely Dyson & Renk^[39], also say that successful individuals will be optimistic about their future to control what is in their environment.

The following supporting factor comes from the family, where the family can have a positive or negative influence on students' academic success. Sacker & Schoon^[40] said that successful students depend on the family's support and the parents' role as caregivers and motivators. Students benefit from parental involvement through good attendance, reasonable homework completion rates, good graduation rates, participation in extracurricular activities, and a positive attitude toward parents. The family is the smallest circle of society that can provide opportunities to develop student's learning abilities. Families continue to seek health support and physical and intellectual development. The role of the family is critical in supporting students' academic achievement, especially in dealing with several obstacles or problems that cannot be solved^[41]. The involvement of families, especially parents, is essential to students' academic success^[34]. Supporting factors from the family have a fundamental commitment to completing a bachelor's program at college, which includes moral support, financial support, daily support, maintaining interest, and praise. Support from parents is a critical factor that influences students' aspirations to enter college regardless of the level of parental education. Conversely, the lack of family support is a barrier to student success in college.

The following supporting factor comes from educational institutions where students spend their time; the institution must act as the glue that holds all the supportive elements together to benefit students. Institutions are places for them to develop and learn through social and academic engagement. However, Braxton, Bray, & Berger^[42] say that the university environment faces many challenges in providing a climate that supports the formation of student academic resilience. The campus climate should warmly welcome all students, provide comfort and contribute to student success.

Positive experiences such as positive interactions with peers, positive interactions with faculty members, clear rules and regulations, high achievement expectations, constructive feedback, and academic involvement support resilience behavior^[43]. The influence of good peers is also essential when making career choice decisions, and lecturers are also valuable assets for students. Meaningful interactions between students and lecturers provide social and academic benefits for students^[44].

According to Froh et al^[45], intervention programs such as counseling and counseling in institutions are valuable resources to help students get help to survive in difficult situations. Academic institutions help students develop academic resilience by providing a positive and safe learning environment, creating high but achievable academic expectations, and facilitating student academic and social success.

The supporting factors from the social environment include supportive peers, positive community influences such as worship communities, friends outside Campus who are easy to contact, sports communities, and positive role models. Environmental supporting factors include neighboring communities, role models, mentors, coaches, neighbors, and counselors^[46]. Peers with the same mindset, goals, and background influence student academic achievement because they will see that they are not alone in their struggle^[47]. Successful students usually have role models and those who care about them and always provide input and help make good decisions. They also can make good friends, so peer influence is significant when deciding to stay in college. Benard^[35] said peer relationships contribute to student's social development and cognitive and socialization skills.

Factors that influence the development of student academic resilience are also related to the surrounding adults who provide support and contributions. According to Werner^[48], successful students have confidence in themselves that there is meaning in life after hardships and hardships. The worship community provides stability and resilience structure to students. The interactions between supporting factors originating from individual students, families, and educational institutions and supporting elements from the social environment produce academic resilience^[49]. Morales's research^[24] sees individuals who have academic resilience have positive relationships with peers and

receive support from family and support from the community.

According to Kendra & Wachtendorf^[50], research on academic resilience suggests several things for the formation of resilience, such as building relationships with others, strengthening adaptive skills and self-regulation, and applying belief systems and traditions in culture and religion. One of the traditions suggested in faith is to be grateful for what you have and are faced with. Individuals are equipped with the ability to deal with stressful conditions with gratitude because gratitude can increase life satisfaction, reduce the desire for material things, and become a reinforcement in social relationships^[51].

College life can be a significant life transition for students who demand adaptability. New students, in particular, often experience not pleasant experiences but difficulties and fears. They adapt to all the latest campus life, meet new people, and face tough academic challenges.

According to Seligman, Steen, Part, & Peterson^[52], academic resilience is a particular and exciting topic to see students' academic achievement and analyze cognitive and affective processes in students. Understanding student resilience in dealing with all forms of difficulties that exist in the academic world is an important thing to research. Resiliency in higher education has also begun to get much attention in research because it is considered an effort for students to survive in the difficult conditions of higher education^[53]. Although gratitude is one of the positive psychological interventions that has succeeded in helping resilience, the intervention has yet to undergo rigorous testing.

Resiliency studies were found to be associated with other psychological variables. Research by Javanmard^[54] shows that religious belief positively relates to resilience, and strong religious belief is a predictor of the formation of the resilience variable. Canon^[55] says that gratitude is related to resilience, but Fredrickson, Tugade, Waugh, & Larkin's^[56] research shows the opposite result, where gratitude is not related to resilience. Several characters are also considered supporting factors for resilience. Such as courage, creativity, curiosity, justice, forgiveness and forgiveness, hope, humor, integrity, kindness, leadership, love to learn, open-mindedness to input, self-resilience, perspective, wisdom, self-regulation, social intelligence, spirituality, and vitality. However, only some studies

still discuss the relationship between academic resilience and gratitude. In addition, the results of studies that look at the relationship between resilience and gratitude seem inconsistent.

Formulation of the problem

Based on the explanation above, the challenge in the era of Society 5.0 is the improvement of digital soft skills, especially digital resilience and academic skills. Research on mapping digital resilience from the perspective of Society 5.0 has been carried out in several countries but specifically has yet to be found in Indonesia. Research on digital resilience has previously been conducted in various countries. Such as South Korea, which examined the diversity of types of digital platforms^[57]. In the UK and Canada, there has been researching on digital resilience in universities^[2]. India also examines digital resilience at the Indian Campus through an epistemological perspective^[58]. Therefore, research is needed to map digital resilience and academic skills from the perspective of Society 5.0 in Indonesia. The research questions that will be found in this study are as follows: a) What is the description of the digital resilience and academic skills of the Society 5.0 perspective? b) What factors affect the digital resilience and academic skills of the Society 5.0 perspective, and c) How are the digital resilience and academic skills framework of the Society 5.0 perspective?

Research purposes

Based on problems and contexts faced in the world of education, the objectives of this research are: (1) to develop a digital framework for resilience and academic skills from the Society 5.0 perspective for students at the tertiary level, (2) to map the digital conditions of resilience and academic skills of students from the Society 5.0 perspective in Indonesia, and (3) describe the factors that influence the digital resilience and academic skills of students from the Society 5.0 perspective.

Literature review

Society 5.0

The development of the community structure is generally categorized as a Pre-Industrial society which includes a hunter-gatherer community (Society 1.0) and an agricultural community (Society 2.0), an

Industrial community (Society 3.0), and a Post-Industrial community—called the information society (Society 4.0). Furthermore, the World Economic Forum in Davos – Switzerland 2019^[59] discussed a new social order called Society 5.0. This Super Smart society is defined as A human-centered society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space¹. The position of social order in following the development of the industry, with a comparison that can be illustrated in Figure 2 below:

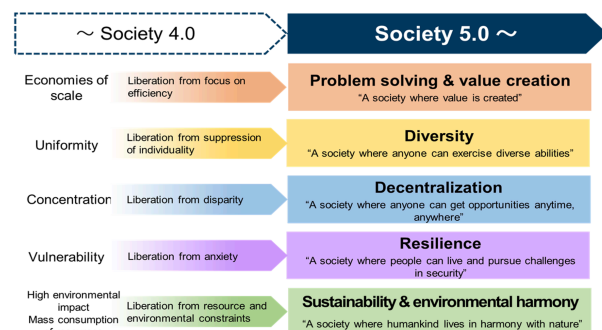


Figure 2. Matching the position of the social order with the development of the industry²

Some of Indonesia's social order and industrial developments show that we are still in an agricultural society (Society 2.0) and an industrial society (Society 3.0) with Industry 01 and 02. Even though Indonesian culture has become part of the Post-Industrial order³ (information society - Society 4.0) with very high use of gadgets and the Internet in remote villages, the community has yet to show actual characteristics as a knowledgeable generation with significantly increased intelligence due to advanced technology (Artificial Intelligence, Big Data, Robotics, Deep Learning, and Machines).

Meanwhile, almost all jobs in the information society will require digital literacy and skills. For Indonesia to produce productive human resources in the era of the information society, all curriculum substances and learning processes in higher education must contain education that hones literacy and adequate digital skills.

In line with the Freedom of Learning policy, the learning culture in higher education must promote flexibility in how students and society learn. Also, it must be able to encourage Borderless education,

where students can take learning packages that are considered essential for themselves to be flexible. Universities must also be able to carry out lifelong learning by properly utilizing Past Learning Recognition instruments.

The shift from online learning to digital learning, in one generation, in countries with advanced information technology is presented in Figure 3 below. From this illustration, the current learning system in Indonesia still relies on conventional learning processes, twenty-five years behind catching up with digital learning methods. The Covid-19 pandemic has forced Indonesia's education system and all its aspects to move to online education. Even though the capacity of universities, lecturers, instructors, information technology facilities, and infrastructure, student culture still needs to be prepared; the Covid-19 pandemic forces Indonesia to innovate the system. Learning targets the shift from traditional knowledge to digital learning.

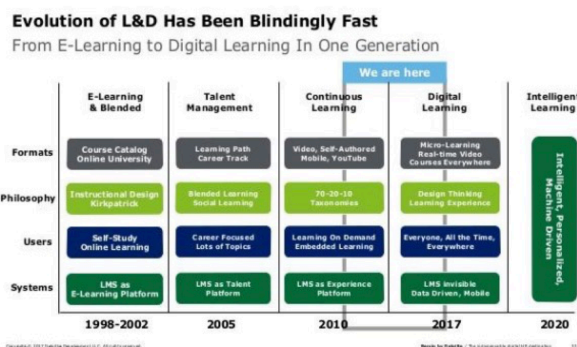


Figure 3. Change from online learning to digital learning in one generation⁴

In the extraordinary situation of change, the education sector will experience four decisive stages:

1. The reaction stage, indicated by panic behavior, arises due to a lack of priorities and uncoordinated responses, confusion in decision-making related to unfamiliar conditions in a short time, and surprise because the face-to-face learning model suddenly cannot be run.
2. The resilience of the education sector indicates the stage of self-reinforcement in anticipating and preparing itself to begin replacing traditional learning with an online learning model.
3. The recovery stage is critical because, at this stage, the world of education must prepare well

and fix all things that are still lacking in the previous step.

4. The new normal stage is a period of adapting life to new lifestyle standards that coexist with the existence of Covid-19.

The rapid evolution of information and communication technology brings drastic changes to society and industry. Digital transformation will create new values and become a pillar of industrial policy in many countries. In anticipation of such a global trend, Society 5.0 was presented as a core concept in the 5th Basic Plan of Science and Technology, which the Cabinet of Japan adopted in January 2016. It was identified as one of the growth strategies for Japan. Society 5.0 is also a core part of Investment Strategy for the Future 2017: Reforms to Achieve Society 5.0^[10].

According to the Cabinet Office of Japan, Society 5.0 is a human-centered society that balances economic progress with solving social problems through a system that integrates virtual and physical space 4.0. So why the era of Society 5.0 appeared? The study of the 4.0 industrial revolution era, considered to have the potential to degrade human roles, gave Japan birth to a concept, namely Society 5.0. Through this concept, it is hoped that artificial intelligence will transform big data collected through the Internet in all areas of life into new wisdom, hoping to increase the human ability to open up opportunities for humans.

Society 5.0, or what can be interpreted as society 5.0, is a concept that the Japanese Government initiated. The Society 5.0 concept is not only limited to manufacturing factors but also solves social problems with the help of the integration of physical and virtual spaces^[60]. Society 5.0 has the concept of big data technology collected by the Internet of Things (IoT)^[61] changed by Artificial Intelligence (AI)^[11] be something that can help the community so that life becomes better^[6]. Society 5.0 will impact all aspects of life, from health, urban planning, transportation, agriculture, industry, and education (Law of the Republic of Indonesia on the National Education System).

Currently, education in Indonesia is entering the 4.0 era. The current trend in Indonesian education is online learning^[62] which uses the Internet as a liaison between teachers and students. Technology development is an educational business opportunity to establish online-based tutoring^[63]. In addition,

technological developments have also changed the education order in Indonesia; for example, 1) since 2013, the national examination system has changed from paper-based to online-based tests.^[8] 2) the admission system for new student admissions from elementary school to university level in Indonesia has been carried out online, from registration to announcement of admissions.^[64]

The role of teachers or lecturers in the Industrial Revolution 4.0 era must be watched out for; educators should not only focus on their duties in transferring knowledge but also emphasize character, morality, and exemplary education. It is because the transfer of knowledge can be replaced by technology. However, the application of soft skills and hard skills cannot be replaced with sophisticated tools and technology.^[65] With the birth of Society 5.0, it is expected to be able to create technology in the field of education that does not change the role of teachers or instructors in teaching moral and exemplary education to students.

There is a shift in civilization today, where society has been swept away in the flow of change driven by information technology. Society depends on the sophistication of technology. Information technology which is at the core of the industrial revolution 4.0, becomes the holder of control over community activities and affects the relationship between citizens and their Government^[65]. If this is not controlled immediately, technological progress will become a boomerang for civilized society. However, one country has proven not to worship technology, namely Japan.

Era Society 5.0 was developed by the Japanese Government in January 2016. The concept is a development of the previous society concept, which started from Society 1.0 until it reached Society 5.0. Society 5.0 is an information society built on Society 4.0 to create a prosperous society that is human-centered, no longer on information technology as happened in Society 4.0.

Society 5.0 is explicitly to create a people-centered culture that has achieved the targets of economic and social development so that a high quality of life is realized, namely active and prosperous.^[63] Society 5.0 era society always strives to meet the various needs of humans regardless of their demographic characteristics through the provision of appropriate goods and services—the key to realizing Society 5.0 lies in integrating the cyber environment. Moreover, the natural world produces quality data, which is the basis for value creation and new solutions to overcome the challenges of civilization.^[10]

The stages of development from Society 1.0 to Society 5.0 can be seen in Figure 4. The principal capital to go to Society 5.0 is the accumulation of organized data in Big Data and reliability in the product manufacturing process through the possession of appropriate advanced technology. Nevertheless, fundamental obstacles still need to be overcome to enter the Society 5.0 era, including health, mobility, infrastructure, and financial technology (financial technology or fintech).^[66]

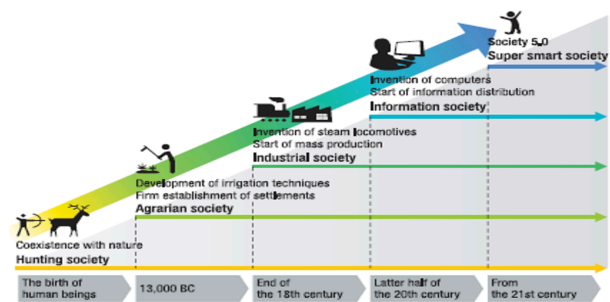


Figure 4. Developmental Stages from Society 1.0 to Society 5.0 Source:^[10]

Society 5.0 is based on IT systems featuring an iterative cycle in which data is collected, analyzed, and then transformed into meaningful information, which is then applied in the real world; moreover, this cycle operates at the level of society at large. Society 5.0 identifies three elements that drive social innovation: data, information, and knowledge^[67]. Public awareness, data, news, and knowledge spur future social innovation for social systems^[62].

Therefore, Japan developed its country's growth strategy that made humans the center of civilization, known as Society 5.0^[68]. Suppose the basic principle of the industrial revolution 4.0 is the integration of machines, workflows, and systems, by applying intelligent networks along the production chain and processes to control each other independently. In that case, the concept of Society 5.0 puts forward the significant role of humans in transforming organized data. Digital technology devices developed in the industrial era 4.0 to improve human abilities and open opportunities for humanity to achieve a meaningful life^[62].

Society 5.0 encourages changes in technology applications back to their original purpose, namely serving humans and making human life easier and

more comfortable through fulfilling all human interests appropriately, effectively, and efficiently.^[44] Claims, in this case, include interests in individual and social contexts, which cannot be fulfilled in the era of the industrial revolution 4.0, which creates a significant gap in social interaction. Such as the sinking of individuals in their busyness with technological devices to ignoring the surrounding environment or the low level of human awareness to help. Address the humanitarian problems that occur in other parts of the world.

There are many challenges and changes to be made in this era of Society 5.0. Including those that the education unit must prepare as the main gate to preparing excellent human resources. It is considering the critical role of the world of education in improving the quality of human resources in the era of Society 5.0. In this world of education, educators minimize their role as learning material providers; educators become an inspiration for the growth of students' creativity. Educators act as facilitators, tutors, motivations, and true learners who motivate students to Learn Independently.^[68]

Digital Resilience

Resilience implies a process of creating positive development for the long-term learning process. The term digital resilience continues with discussions related to 'lifelong learning. Digital resilience is closely related to education, which refers explicitly to using equipment or technological completeness as a digital resource to carry out a long-term educational process in the digital era.^[12]

Digital resilience is defined as a resource that is important to sustain human life in the digital era. Digital resilience refers to technology such as the Internet in the digital age and society 5.0. Digital resilience plays a role in recognizing and processing knowledge gained from technological developments through digital platforms so that 5.0 people can socialize and work online^[69]. Efforts to build digital resilience are essential in realizing a good life in this era of technological advancement. The purpose of building digital resilience includes several factors, such as individual fragility factors, personal factors, social factors, and digital factors. Some places can be a source for building digital resilience, such as homes and schools^[70].

Digital resilience can also be understood as a step to create resilience against various forms of enemies

that threaten society 5.0 in the communication space or digital interaction space. The conditions of digital resilience can include anticipating, recognizing, and defending against threats that are present in the digital world^[11]. This study's efforts to build digital resilience refer to the steps taken through education to achieve community digital resilience 5.0. Digital resilience or digital resilience cannot be separated from the context of policy-making, community culture, and social situations. Any three contexts show an understanding that society 5.0 has various aspects related to public awareness, changes in community behavior, and adaptation.^[13] Creating digital resilience from a social perspective is essential to maintaining human life as individuals and communities.

Efforts to build digital resilience are essential in achieving a digital society's success in the era of Society 5.0. It is marked by the advancement of digital technology that enters various aspects of human life. The change or transformation of society 4.0 towards Society 5.0 shows that digital resilience is needed to create a better life in a digital society, especially in improving the quality of life alongside technological advances. Digital resilience in the perspective of Society 5.0 contains an understanding of human intelligence in the Society 5.0 era in optimally socializing through digital platforms^[62]. Thus, the intelligent society era is in the Society 5 phase.

Academic Skills

Society 5.0 is a progress and a challenge for academics, and the readiness of educational institutions to face this is a necessity that cannot be avoided. Because educational institutions as a forum to improve the quality of human resources plays an essential role in preparing a generation ready to survive in the face of various future challenges.

The impact of Society 5.0 on various aspects of life is the efficiency process by maximizing the performance of digital devices and degrading most human roles^[71]. Essential academic skills to be developed in the era of Society 5.0 are problem-solving, critical, and creative thinking skills. According to Predy, five skills are considered necessary in developing human resources in education: professionalism, competitive power, functional competence, participatory excellence, and cooperation.^[72] In addition, Society 5.0 has an effect on student learning patterns as follows: 1) learning without time and place limits (blended/online learning), 2) individual learning, 3) project-based learning, and 4) learning to solve problems^[72].

Looking ahead to 2021, 2024, 2027 and 2030

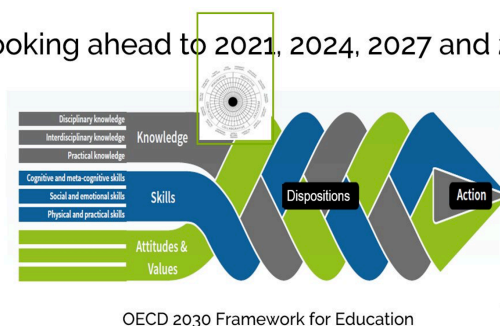


Figure 5. OECD 2030 Learning Framework

Referring to the Figure 5 above, the Organization for Economic Co-operation and Development (OECD) said that there are three aspects of academic skills, namely: 1) knowledge, 3) skills, and 3) attitude. Furthermore, it is described in detail that academic skills in the knowledge aspect are divided into four abilities: 1) single discipline, 2) multi-discipline, 3) epistemology, and 4) procedural. In the part of skills, there are three abilities: 1) cognitive and metacognitive, 2) social and emotional, and 3) physical and practical. For aspects of attitudes and values, there are four abilities, namely: 1) personal, 2) local, 3) social, and 4) global^[73].

Research Methodology

This study was designed using a combination of qualitative and quantitative methods. A qualitative approach is carried out in describing the condition of digital resilience and student academic skills from the perspective of Society 5.0 in Indonesia. A quantitative approach is used to determine the factors that influence digital resilience and academic skills in higher education from the perspective of Society 5.0. The research is divided into two stages. The first stage is to formulate the measurement construct with an

open-ended questionnaire qualitatively. The second stage, namely constructing the Digital Resiliency and Academic Resiliency scale in the form of a Likert Scale of 5 answer choices (Highly Incompatible/STS, Not Appropriate/TS, Neutral/N, Appropriate/S, and Very Appropriate/SS) based on qualitative data obtained in the first stage. As previously explained, the construction of measuring instruments in this study was adopted from the theory of the Organization for Economic Co-operation and Development for Digital Resiliency and the theory of Cassidy & Eachus^[74] for Academic Resiliency.

Respondents who participated in this study were students from Bina Nusantara University, Padjadjaran University, Telkom University, Parahyangan University, and Indonesian Education University. They have attended and are currently attending lectures. Online. Twenty-one students participated in the first stage, while 116 were in the second. The administration of the open-ended questionnaire and the scale to the respondents is done online by providing a Google Form link.

Resiliency Digital Instruments

The instrument used in this study is a psychological resilience scale adapted from The Connor-Davidson Resilience Scale (CD-RISC). CD-RISC was developed by Connor & Davidson^[15] to measure psychological resilience through 5 dimensions, namely: 1) Personal competence, high standards, and tenacity, 2) Trust in one's instinct, tolerance of negative affect, 3) Positive acceptance of change and secure relationship, 4) Control, 5) Spiritual influence. In this scale, there are 25 statement items with answer choices from a scale of 1 (very inappropriate) to a scale of 5 (very appropriate) (See Table 1). The adaptation scale was first tested for validity and reliability in this study. Based on the reliability test results, Cronbach's Alpha coefficient was 0.93, and all items were declared valid (with an inter-item correlation of 0.3).

Variable	Indicator	Scale
Personal Competence, High Standards, and Tenacity	1. Able to adapt to change	Likert 1-5
	2. Close and secure relationships	Likert 1-5
	3. Sometimes fate or God can help.	Likert 1-5
	4. Can deal with whatever comes	Likert 1-5
	5. Past success gives confidence for a new challenge	Likert 1-5
	6. See the humorous side of things.	Likert 1-5
	7. Coping with stress strengthens	Likert 1-5
	8. Tend to bounce back after illness or hardship	Likert 1-5
Trust in One's Instinct, Tolerance of Negative Affect	9. Things happen for a reason	Likert 1-5
	10. Best effort, no matter what	Likert 1-5
	11. You can achieve your goals.	Likert 1-5
	12. When things look hopeless, I do not give up	Likert 1-5
	13. Know where to turn for help	Likert 1-5
	14. Under pressure, focus, and think clearly.	Likert 1-5
	15. Prefer to take the lead in problem-solving	Likert 1-5
Positive Acceptance of Change and Secure Relationship	16. Not easily discouraged by failure	Likert 1-5
	17. Think of yourself as a strong person	Likert 1-5
	18. Make unpopular or difficult decisions.	Likert 1-5
	19. Can handle unpleasant feelings	Likert 1-5
	20. Have to act on a hunch	Likert 1-5
Control	21. A Strong sense of purpose	Likert 1-5
	22. In control of your life	Likert 1-5
	23. I like challenges	Likert 1-5
Spiritual Influence	24. You work to achieve your goals	Likert 1-5
	25. Pride in your achievements	Likert 1-5

Table 1. Variable Digital Resiliency

Academic Resiliency Instruments

The measurement construction of the measuring instrument in this study was adopted from Cassidy & Eachus^[74] theory of Academic Resiliency. According to Cassidy & Eachus^[74], Academic Resiliency is an individual's ability to increase success in education, even in difficult situations. Cassidy further explained

three aspects that make up Academic Resiliency: (1) Perseverance, which describes individuals who work hard (keep trying and do not give up quickly), focus on plans and goals, receive and utilize feedback, and can solve problems, Creatively and imaginatively, and position adversity as an opportunity for growth; (2) Reflecting and adaptive help-seeking (reflecting and adapting in seeking help), namely individuals who can reflect on their strengths and weaknesses and can

seek help, support, and encouragement from other individuals as an effort to individual adaptive behavior; (3) Negative affect and emotional response (negative affect and emotional response) is a picture of anxiety, negative emotions, optimism-pessimism, and negative acceptance possessed by individuals

during life (See Table 2). In this case, resilient individuals can avoid things related to negative responses, feel calm (low anxiety and have meaningful feelings where individuals have confidence in their goals in life and the things they live in).

Variable	Indicator	Scale
Perseverance	1. Work hard (keep trying and do not give up easily)	Likert 1-5
	2. Focus on plans and goals	Likert 1-5
	3. Receive and utilize feedback	Likert 1-5
	4. Creative and imaginative problem-solving.	Likert 1-5
	5. Positioning difficulties as opportunities	Likert 1-5
Reflecting and adaptive help-seeking	6. Reflect on strengths and weaknesses	Likert 1-5
	7. Changing learning approach	Likert 1-5
	8. Seeking help	Likert 1-5
	9. Support and encouragement	Likert 1-5
	10. Monitoring efforts and achievements	Likert 1-5
	11. Giving rewards and punishments	Likert 1-5
Negative affect and emotional response	12. Worry	Likert 1-5
	13. Catastrophising(thinking of bad things, catastrophe, disaster)	Likert 1-5
	14. Avoid negative emotional responses.	Likert 1-5

Table 2. Academic Resiliency Variables

Data analysis

Before collecting data with questionnaires, validity and reliability tests were carried out on the research instruments used, which were carried out in Year 1. The validity test was carried out with evidence based on content which was carried out by conducting content assessments by experts (expert judgment). Moreover, evidence-based constructs, namely through Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), to obtain a fit model of the digital resiliency research instrument and academic skills of the Society 5.0 perspective students. The reliability test used Cronbach's Alpha statistical test with Cronbach's Alpha value above 0.6. Furthermore, to test the overall results regarding the mapping of digital resilience and academic skills of Society 5.0 students in Indonesia, Structural Equation Modeling (SEM) analysis will be carried out.

Qualitative Data Collection Techniques

For the qualitative method, the determination of informants was selected purposively (purposive sampling). Data were collected in two ways, namely

in-depth interviews and observation. The data collected by qualitative methods relate to digital resilience variables and students' academic skills, as shown in the table above.

Deep interview

In-depth interviews were conducted using online interview guidelines with higher education stakeholders concerning digital resilience and student academic skills for students in higher education.

Observation

Observations were made to find out directly the activities of higher education stakeholders. How are the actions of higher education stakeholders to respond to digital resilience and student academic skills at several campuses in the City of Bandung?

Quantitative Data Collection Techniques

For quantitative research, data analysis uses descriptive analysis to determine the characteristics of the results of each question attached to the questionnaire. Quantitative data was obtained from

students, lecturers, and alums in the City of Bandung by conducting a questionnaire survey. For student data, a sampling technique was used, namely simple random sampling using the determination of the number of samples required using the following formula:

$$\frac{NZ^2 \cdot P(1 - P)}{Nd^2 + Z^2 \cdot P(1 - P)} = n$$

Information:

n: Sample size (respondents)

N: Total population

Z: Normal variable value (1.96) at 0.95. rehabilitation

Q: The most significant possible proportion (50% or 0.50)

d: Margin of error

The prepared questionnaire contains questions related to digital resilience variables and students' academic skills. The questionnaire was distributed to several campuses in the City of Bandung, asking (to interview) the respondents directly.

The sampling of the university management was carried out on a non-probability basis due to the absence of a sampling frame related to the number of university members. The selection of respondents is based on judgmental sampling, namely the choice of research subjects who have the best position or are in the most advantageous place in providing information. The selection of respondents is based on their capabilities and experience in involvement in the stages of higher education management.

Results and Discussion

Result

Digital Resiliency

The statistical analysis results of the dimensions & sub-dimensions of digital resilience are listed in Table 3.

Dimensions and Sub Dimensions	Average (Mean)	Standard Deviation (SD)
Resilience	96.24	14.75
Personal Competence, High Standards, and Tenacity	31.23	5.22
Trust in One's Instinct, Tolerance of Negative Effects,	26.12	4.56
Positive Acceptance of Change and Secure Relationship	18.11	3.74
Control	11.86	2.15
Spiritual Influence	8.92	1.30

Table 3. Dimensional and Sub-Dimensional Descriptive Statistics of Resilience

Based on the table above shows that the digital dimension of resilience has a total average score of 96.24. The highest average value comes from Personal Competence, High Standard, and Tenacity, which is 31.23. At the same time, the lowest average value is on Spiritual Influence (8.92).

Meanwhile, the results of the calculation of the categorization of the digital resilience dimension score data are listed in Table 4. Of the total research respondents, 89 people (64.9%), medium resilience was 46 people (33.8%), and low resilience was two people (1.2%).

Categorization	Total (n)	Percentage (%)
Tall	89	64.9
Currently	46	33.8
Low	2	1.2
Total	137	100

Table 4. Categorization of Resilience Score

Furthermore, the results of the calculation of the data categorization of the sub-dimension of personal

competence, high standard, and tenacity are shown in Table 5; as many as 89 people (64.9%) are high, 45 people (33.3%) are in the medium category, and three people (1.8%) with low class.

Categorization	Total (n)	Percentage (%)
Tall	89	64.9
Currently	45	33.3
Low	3	1.8
Total	137	100

Table 5. Personal Competence, High Standard, and Tenacity Sub-Dimensional Scores

The results of the calculation of the data categorization of the trust to one's instinct sub-dimensional score, and tolerance of negative affect, can be seen in Table 6. As many as 74 people (54.7%) are classified as high, 60 people (43.6%) are classified as moderate, and three people (1.8%) are classified as low

Categorization	Total (n)	Percentage (%)
Tall	74	54.7
Currently	60	43.6
Low	3	1.8
Total	137	100

Table 6. Trust to One's Instinct Sub-Dimensional Score, Tolerance of Negative Affect

The results of the calculation of the categorization of the positive acceptance of change and secure relationship sub-dimension score data are shown in

Table 7. As many as 66 people (47.9%) are classified as high, 64 people (47%) are classified as moderate, and seven people (5.1%) are low.

Categorization	Total (n)	Percentage (%)
Tall	66	47.9
Currently	64	47
Low	7	5.1
Total	137	100

Table 7. Sub-Dimensional Score Positive Acceptance of Change and Secure Relationship

The results of the calculation of the categorization of the control sub-dimensional score data are shown in

Table 8. As many as 82 people (59.9%) were high, 53 people (38.9%) were moderate, and two people (1.2%) were low.

Categorization	Total (n)	Percentage (%)
Tall	82	59.9
Currently	53	38.9
Low	2	1.2
Total	137	100

Table 8. SubDimensional Score Control

The results of the calculation of the categorization of the spiritual influence sub-dimensional score data are shown in Table 9. As many as 119 people (87.1%) were

classified as high, 17 people (12.1%) were classified as moderate, and one person (0.8%) was classified as low.

Categorization	Total (n)	Percentage (%)
Tall	119	87.1
Currently	17	12.1
Low	1	0.8
Total	137	100

Table 9. Dsub-importance score Spiritual influence

Academic Resiliency

Academic Resiliency research data were analyzed by looking at the correlation between each item with a total score using the Pearson Product Moment Correlation. The item-total correlation was used to select the items that best measured the construct or content being measured by selecting items found to be

significant at the 0.01 level. Based on the Academic Resilience scale, from the initial 53 items that were constructed, 12 items fell out (non-significant item-total correlation), leaving 41 items that were in line with the measuring function, with a range of item-total correlation coefficient values from 0.301 to 0.711. A more detailed description of the item-total correlation coefficient value on the Academic Resilience Scale can be seen in Table 10.

No.	Items	Correlation
1	I will give up if my efforts in college are not successful	.465**
2	I will use the advantages that I have to increase my potential	.619**
3	In my opinion, the opportunity to excel in this department is minimal	.533**
4	I will try not to think negative	.456**
5	My past success does not raise my motivation to study	.445**
6	I will seek help from the lecturer if I have problems during the lecture	.514**
7	I feel burdened by online lectures	.370**
8	I will give the spirit of learning to myself	.561**
9	I will reward myself if I succeed in my studies	.522**
10	I will try not to panic when there are many pressing tasks	.400**
11	I will feel challenged if given a difficult task	.509**
12	I try a new learning approach if I have trouble	.499**
13	When there is a problem in class, I will think of a new, more effective solution	.524**
14	I tried various methods/ways of learning during online lectures	.492**
15	I do not receive feedback (assessment and input) from lecturers	.418**
16	Online lectures make it difficult for me to divide my time	.381**
17	The success that has been achieved will motivate me to learn	.445**
18	I feel like my studies will go badly	.550**
19	I am sure the difficulties in my studies are only temporary	.301**
20	I believe that I can be successful in the world of work	.540**
21	I am afraid to ask the lecturer for help when I have learning difficulties	.514**
22	I will seek support from my family when I feel down	.398**
23	The weakness that I have will spur me to be more active in studying	.711**
24	Even though it is hard to divide my time, I will still complete my lectures optimally	.441**
25	The difficulties I experience in learning will make me lose motivation	.612**
26	The weakness I have makes it difficult for me to study	.592**
27	I will monitor the extent of my efforts to get good study results	.511**
28	I will set goals for better learning achievement	.472**
29	I am worried that I will not get a job later	.475**
30	I have trouble finding solutions when I face new problems in online lectures	.406**
31	I keep quiet when I have trouble	.454**
32	I will keep trying even though I have failed in my studies	.375**
33	The feedback (assessment and input) from the lecturers that I get is useful in improving my learning	.430**
34	I will fight the fear of failure	.622**
35	I am embarrassed to ask, even though I do not understand the lecture material	.499**

No.	Items	Correlation
36	I have not been able to optimize the advantages that I have	.454**
37	I feel I have a great opportunity to excel at this university	.534**
38	I will evaluate the learning outcomes that have been achieved	.638**
39	It is hard for me to change the way I study	.571**
40	I will show that I can improve my grades for the better	.406**
41	I will feel pressured if the task deadline is too much	.401**

Table 10. Item-Total Correlation Coefficient of Academic Resilience Scale

After deducting the dropped items, the blueprint for the Academic Resilience Scale is rearranged, as shown in Table 11.

Aspect	Indicator	Favorite Items	Unfavorable Items	Amount
Perseverance	Work hard (keep trying and do not give up easily)	24.32	1	3
	Focus on plans and goals	19		1
	Receive and utilize feedback	33	15	2
	Creative and imaginative problem solving	4,13,40	30	4
	Positioning difficulties as opportunities	11	16.25	3
Reflecting and adaptive help-seeking	Reflect on strengths and weaknesses	2.23	26.36	4
	Changing learning approach	12,14,28	39	4
	Seeking help	6	21.35	3
	Support and encouragement	8.22	31	3
	Monitoring efforts and achievements	17,27,38	5	4
	Giving rewards and punishments	9		1
Negative affect and emotional response	Worry	20.37	3.29	4
	Catastrophising(thinking of bad things, catastrophe, disaster)	34	7,18,41	4
	Avoid negative emotional responses	10		1
Total				41

Table 11. Academic Resilience Scale Blueprint

The scale in this study uses internal consistency with the Cronbach Alpha method. The Digital Resilience and Academic Resilience Scale have a reliability value of 0.917, as shown in Table 12.

No.	Measuring instrument	Cronbach's Alpha	N of Items
1	Resilience Digital Scale	.917	25
1	Academic Skills Scale	.917	41

Table 12. Statistical Reliability

Based on the analysis carried out on the measuring instrument items of this study, 41 items were obtained for the Academic Resilience Scale with a Cronbach Alpha reliability value of 0.917. Likewise, the Digital Resilience Scale with Cronbach's Alpha reliability value of 0.917. So this measuring tool is reliable and appropriate to explain digital and academic resilience in students during Covid-19.

Discussion

Digital Resiliency

This study aims to obtain an overview of resilience in students during the online learning period, which in Indonesia began around mid-March 2020. From the results of research conducted on 137 students from various campuses in the city of Bandung, which were born in the time range from May to June 2022, it is shown that the ability of these students to overcome various obstacles and difficulties experienced during online learning is generally in the high category. The data shows that more than half of the respondents (64.9%) are in the high category. Meanwhile, 33.8% of the respondents were in the medium category, and only a tiny proportion (1.2%) were in the low category. These data indicate that, even though they are in an online learning situation during the Covid-19 Pandemic, students show their psychological capacity and ability to overcome various complex problems during the online learning process. Where in this online learning, many situations have the potential to weaken the passion for learning and interfere with learning performance. Such as the lack of infrastructure such as books, laptops, and others when students are in their hometowns; inadequate internet network; a situation in the family or home that is not conducive; and so forth. However, despite these stressful conditions, most students have solid beliefs and positive perceptions about their ability to face various demands and difficulties. As well as,

changes that occur during online lectures can manage various stresses experienced, so they are not frustrated, can see the spiritual side of difficult situations that arise, and get up from adversity or uncomfortable situations encountered in this pandemic situation and online learning. Alva^[23] describes resilient students as individuals who maintain and maintain their motivation and performance even when faced with stressful situations or situations that have the potential to reduce learning performance.

It is, moreover, risen from adversity or uncomfortable situations experienced in this pandemic and online learning. Alva^[23] describes resilient students as individuals who maintain and maintain their motivation and performance even when faced with stressful situations or situations that have the potential to reduce learning performance. Moreover, rise from adversity or uncomfortable situations experienced in this pandemic and online learning. Alva^[23] describes resilient students as individuals who maintain and maintain their motivation and performance even when faced with stressful situations or situations that have the potential to reduce learning performance.

The dimensions of personal competence, high standards, and tenacity include the individual's positive perception of his abilities and capacities in achieving the goals he has set despite difficulties or stressful situations, even failures^[15]. From this sub-dimensional score categorization data, 64.9% of the respondents are classified as high, 33.3% are classified as moderate, and 1.8% are classified as low. It shows that students are very optimistic about their ability to achieve the goals set regarding situations or problems in the learning they experience during online learning. It is one of the primary keys that can affect their success in participating in online learning.

Sub-Dimension of trust to one's instinct, tolerance of negative affect is the individual's ability to take the

initiative in dealing with problems experienced, have good instincts in problem-solving efforts, and be able to manage negative emotions that are felt^[15]. Based on the results of data categorization, 54.7% of respondents are classified as high in this sub-dimension, 43.6% are classified as moderate, and only 1.8% are classified as low. Thus, students who take online learning have the skills to manage negative emotions and the stress related to the difficulties they experience.

The positive acceptance of change and secure relationship sub-dimension is a dimension related to the positive acceptance of the individual for the changes that occur in connection with the difficulties or problems experienced, which is accompanied by a comfortable feeling in relationships with other people^[15]. From the results of sub-dimensional score categorization, 47.9% of respondents are classified as high, 47% are classified as moderate, and 5.1% are classified as low. This data shows positive acceptance from students of the various changes that have occurred during the Covid-19 pandemic, especially those related to online learning. Of course, this change is difficult, but over time and support of the closest people, in this case, the family,

The control sub-dimension is related to the individual's belief in his ability to direct himself in achieving the goals set even though there are difficult situations experienced^[15]. Based on the categorization results, 59.9% of respondents are high, 38.9% are classified as moderate, and only 1.2% are classified as low. This data shows the students' strong belief in their ability to control and manage their inner energy to achieve their goals, despite difficulties or stressful situations. It is very much needed in online learning, where students need to positively assess their capacity to manage themselves and organize their environment in such a way,

The sub-dimension of spiritual influence is related to the individual's belief in a supernatural power greater than himself, which can help him accept and face the problems or difficulties he experiences^[15]. Based on the results presented in the previous section, most of the respondents (87.1%) belong to the high category for this dimension, 12.1% are classified as moderate, and only 0.8% are classified as low. It indicates the students' strong understanding and belief in supernatural powers that affect their lives, and this belief helps them to accept, adapt, and overcome the problems they face. This condition can be associated with religious beliefs or beliefs held by students,

Based on the explanation above, it can be concluded that students' resilience conditions are generally in the high and medium categories, and only a small proportion are in a low category. It shows that although in the online learning process, there are many challenges or difficulties experienced by students that have the potential to cause stress with various accompanying symptoms, in the process of adjusting to the problems faced, students can overcome these things. In other words, students can develop resilience in the online learning process.

Sheldon & Lyubomirsky^[75] suggests that resilience is the result of efforts to manage various risks or things that have the potential to cause crises in positive ways rather than avoiding these risks. This resilience involves protective factors that allow individuals to survive the various pressures of life they experience. Protective factors can prevent and effectively overcome various obstacles, problems, and difficulties^[57]. These protective factors include: a) various individual personal attributes such as good temperament, optimistic view of oneself, and intelligence; b) family qualities, including cohesiveness, warmth, family involvement, and family expectations; and c) existence and utilization of external support systems outside the family.

Students with positive personal attributes will better perceive problems or difficulties with a positive perspective, so they try to overcome these difficulties effectively. The quality of family support is a crucial factor in encouraging students to be able to overcome various challenges and obstacles experienced in online learning. Families actively involved in online learning by providing material and moral support will enable students to assess themselves as individuals with the power, energy, and ability to overcome the problems and difficulties they experience.

Academic Resiliency

Little research has touched on how academics, students, and practitioners can respond before, during, and after disasters and how their resilience to disruption can be fostered to reduce impacts on learning and teaching. So, valid measurements are needed and can be used anytime as a measuring tool for academic resilience. Therefore, this study aims to construct a measuring instrument for academic resilience in students during the Covid-19 pandemic.

Based on the analysis conducted on the research measuring instrument items, 41 items were obtained for the Academic Resilience Scale, with a Cronbach

Alpha reliability value of 0.917. So this measuring tool is reliable and appropriate to explain students' academic resilience during Covid-19.

The Ministry of Education and Culture has issued two circulars related to the prevention and handling of the coronavirus or Covid-19. Namely, Circular Letter Number 2 of 2020 concerning the Prevention and Handling of Covid-19 within the Ministry of Education and Culture and Circular Letter Number 3 of 2020 concerning the Prevention of Covid-19 in Education Units to take steps to prevent the spread of Covid-19 within the education unit. The move was taken to reduce the potential for crowds to spread the disease Covid-19, which the World Health Organization has declared a pandemic. Data from the Indonesian Higher Education Organizers Alliance as of March 14, 2020, stated that the number of universities that held online learning reached 58 campuses,

Online lectures or systems are more advanced in traditional academic institutions. Studies on student satisfaction have shown that students following assigned assignments every day are more successful in student retention and have the same pass rate. Loss of focus is the most cited reason why students fail in online lectures, and this is less likely if assignments have been set according to schedule^[76]. Hence, lecturers must be creative in designing lectures even if they do not work on Campus. Massive Open Online Courses (MOOCs) have a significant effect on adult learning, such as on students, have a direct impact on improving educational outcomes, the development of student learning skills, effective communication between students and lecturers, and on student academic performance. However, during this Covid-19 pandemic, educators must work harder to instill strategies that support student well-being and foster emotional resilience (resilience) into their curriculum^[77].

The fact that the Covid-19 pandemic has affected the mental health of College members makes it urgent to understand these challenges and concerns to inform the development of public health action programs and messages that can better support students in this crisis^[78]. Student discomfort due to limited digital literacy and the absence of physical human involvement^[77] requires toughness or resilience, which is essential to cope with stress to stay balanced^[79]. People who tend to go out more often, exercise more, receive more social support from family, friends, and significant others, sleep better

and pray more frequently have more psychological resilience^[80]. Support, community, leadership, and planning at universities are critical in building and inhibiting resilience, including incentives that have a reasonably high impact on overcoming various obstacles, which can be used to initiate resilience. Flexible online learning is crucial for building resilience, but universities should not underestimate the importance of face-to-face interactions between staff and students^[81]. These results provide a strong starting point for researchers to understand how universities can cultivate resilience to significant disruptions and disasters in university teaching, such as the Covid-19 pandemic, so that students can experience satisfaction from online learning experiences.

Moreover, planning at universities is critical in building and inhibiting resilience, including incentives that have a reasonably high impact on overcoming various obstacles, which can be used to initiate resilience. Flexible online learning is a crucial opportunity for building resilience, but universities should consider the importance of face-to-face interactions between staff and students^[81]. These results provide a strong starting point for researchers to understand how universities can cultivate resilience to significant disruptions and disasters in university teaching, such as the Covid-19 pandemic, so that students can experience satisfaction from online learning experiences. Moreover, planning at universities is critical in building and inhibiting resilience, including incentives that have a reasonably high impact on overcoming various obstacles, which can be used to initiate resilience. Flexible online learning is crucial for building resilience, but universities should consider the importance of face-to-face interactions between staff and students^[81]. These results provide a strong starting point for researchers to understand how universities can cultivate resilience to significant disruptions and disasters in university teaching, such as the Covid-19 pandemic, so that students can experience satisfaction from online learning experiences. Flexible online learning is a crucial opportunity for building resilience, but universities should consider the importance of face-to-face interactions between staff and students^[81]. These results provide a strong starting point for researchers to understand how universities can cultivate resilience to significant disruptions and disasters in university teaching, such as the Covid-19 pandemic, so that students can experience satisfaction from online learning

experiences. Flexible online learning is crucial for building resilience, but universities should consider the importance of face-to-face interactions between staff and students^[81]. These results provide a strong starting point for researchers to understand how universities can cultivate resilience to significant disruptions and disasters in university teaching, such as the Covid-19 pandemic, so that students can experience satisfaction from online learning experiences.

Meanwhile, universities are essential knowledge producers and higher education providers in any country. The function of universities is to prepare the workforce and professional skills^[82]. On the other hand, students with higher levels of spirituality show greater resilience^[83]. Resilience, also known as resilience, is the ability of a dynamic system to withstand or recover from significant challenges that threaten its stability and development. Resilience is the ability to adapt positively despite substantial adversity. Academic performance is interpreted as an indicator of psychological resilience and a sign of different forms of resilience, namely academic resilience or resilience, defined as the ability to deal with setbacks effectively and pressures in an academic environment. Academic resilience is considered an indicator of school adjustment and a strong predictor of student participation in lectures and learning motivation^[84].

Conclusion

Based on the results and discussion described in the previous section, the following conclusions can be drawn:

1. Based on the categorization of the results of the resilience score, it is known that there are 64.9% of respondents with high resilience, 33.8% have moderate resilience, and 1.2% have low resilience.
2. In the sub-dimension of personal competence, high standard, and tenacity, 64.9% is classified as high, 33.3% is classified as moderate, and 1.8% is classified as low.
3. In the sub-dimension of trust in one's instinct, tolerance of negative affect, 54.7% is high, 43.6% is moderate, and 1.8% is low.
4. In the positive acceptance of change and secure relationship sub-dimensions, 47.9% is high, 47% is moderate, and 5.1% is low.

5. In the control sub-dimension, 59.9% were classified as high, 38.9% were classified as moderate, and 1.2% were classified as low.
6. In the sub-dimension of spiritual influence, 87.1% is high, 12.1% is moderate, and 0.8% is low.
7. Based on the analysis conducted on the items measuring the academic resilience research instrument, 41 items were obtained for the Academic Resilience Scale with a Cronbach Alpha reliability value of 0.917. So this measuring tool is reliable and appropriate to explain students' academic resilience during Covid-19.

Statements and Declarations

Ethics and consent

a. Ethics approval

Full ethical approval has been granted by the Committee of Human Research Ethics (CHRE), Bandung City, West Java Province, Indonesia.

b. Retrospective ethics approval

In this study, there was no need for retrospective ethical approval.

c. New clinical tools and procedures

This study did not use tools or clinical procedures

d. Consent to participate

This research did not require consent to participate

Research involving human embryos, gametes, and stem cells

This chapter does not contain any studies involving human embryos, gametes, and stem cells

Sex and gender in research (SAGER)

This chapter does not contain any studies with Sex and gender in research (SAGER) by any authors

Research involving animals

This chapter does not contain any studies with animals performed by any authors.

Research involving plants

This chapter does not contain any studies with plants performed by any authors.

Research involving palaeontological and geological material

This chapter does not contain any studies involving palaeontological and geological material

Dual Use Research of Concern

This study did not involve the Dual Use of Concern Research

Standards for research in complementary and alternative medicine

This study did not aim to use research standards in complementary and alternative medicine

Consent for publication

Publication permission for manuscripts containing information or graphics is not required

Trial registration

In this study there was no trial enrollment

Availability of data and materials

The authors declare that the data and materials supporting the findings of this study are available in the article

Competing interests

The authors declare that they have no conflict of interest, and We wish to confirm that no known conflicts of interest are associated with this publication. There has been no significant financial support for this work that could have influenced its outcome.

Funding

This study was funded by BINA NUSANTARA UNIVERSITY, Jakarta, Indonesia (Number 9904012937)

Authors' contributions

- Kurniadi wrote the main manuscript text and reviewed the manuscript.
- Laila Meiliyandrie wrote the main manuscript text and reviewed the manuscript.
- Rosyidah Rahmah wrote the main manuscript text and reviewed the manuscript.

Acknowledgements

This work is supported by the Research and Technology Transfer Office, Bina Nusantara University, as a part of Bina Nusantara University's Applied-Basic.

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Notes

A preprint has previously been published^[85]

Footnotes

¹ https://www8.cao.go.jp/cstp/english/society5_0

² <https://www.sphinx-it.eu/from-the-agenda-of-the-world-economic-forum-2019-society-5-0/>

³ <https://en.wikipedia.org/wiki/Society#Types>

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Declarations

Funding: This study was funded by BINA NUSANTARA UNIVERSITY, Jakarta, Indonesia (Number 9904012937)

Potential competing interests: The authors declare that they have no conflict of interest, and We wish to confirm that no known conflicts of interest are associated with this publication. There has been no significant financial support for this work that could have influenced its outcome.