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### Awareness of Education 4.0 to the Students After Pandemic

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#### Abstract

The start of the fourth industrial revolution has profoundly impacted our day-to-day existence, especially concerning raising and improving standards across the board, most notably in education. With the potential to improve it in terms of innovation and quality, technology has assumed its place in determining the direction of the future. Thus, technology plays a significant role in improving and innovating the quality of learning nowadays, which is consistent with and relevant to the study's goal of investigating college of education students' awareness level

of using technology in the classroom and their daily lives. The method used in this study is a quantitative method, which was adopted to analyze the data gathered from the respondents. 30 college of education students participated in the study to answer an adopted questionnaire. Based on the findings, almost all of the students at Cebu Normal University are aware of Education 4.0. It was found that rapid advancement in technology has had a beneficial impact on the education industry.

**Keywords:** Education 4.0, Pandemic, Philippines

#### 1. The Problem and its Scope

##### Introduction

##### Rationale

Due to technological advances, important changes in the structure of society have been brought and experienced over the years. The pandemic, initially expected to last just two weeks, has worsened and killed many people in various countries, including the Philippines.

As a result, everyone, including adults, has learned to use technology, such as YouTube and Facebook, to stay connected and stay updated on trends online. The pandemic has fueled the growth of technology, making it easier for people to communicate and entertain themselves.

Schools have implemented online learning methods, such as Google Classroom, Gmeet, Zoom, Canva, ClassIn, and LMS portal, which have provided more opportunities for education regardless of location. How do teachers perceive their role in promoting digital literacy and responsible technology use among students in Education 4.0?

As driven by technological development, it allows students to freely access more information and knowledge in the field of education. The education 2.0 and 3.0 have brought access to information, greater interaction and connectivity particularly to students. The dynamism of technology also brought opportunities for innovation with Education 4.0, as it improves the operational processes through new learning and teaching methods, innovative solutions to current and future challenges in the society. These changes oriented to a meaningful learning of new educational methodologies that prepare the students to have necessary desirable skills to be improved.

Even after the pandemic with the introduction of digital natives and the widespread use of technology in teaching and learning today, the environment has continued to evolve quickly. For example, the internet applications of educational tool modes like e-learning, blended learning, and Massive Open Online Courses (MOOCs) have resulted in a re-evaluation of the transmission-based system where the teacher serves as the source of knowledge. There is an increased interest in helping to facilitate learning and helping learners construct and personalize learning. Alstete & Beutell (2018) call for a better link between learning and learning environments, and this need is also increasingly visible in schools today.

Schools across the globe have embarked on significant measures to relook at the traditional classroom design to cater to youth who are increasingly independent, self-directed and looking to produce and create knowledge rather than simply memorizing

facts. Today's classrooms need to be "arenas for innovative teaching practices that are not easily implemented in more traditional classrooms" (Breslow *et al.*, 2013). As Micklethwaite & Knifton (2017) posit, learning spaces are nestled within virtual and real environments today.

Education 4.0 specifically alters how teachers instruct and students learn in the context of the educational environment. Nowadays, you're likely to hear Education 4.0 mentioned in training, seminars, lectures, and even meetings as one of the most important parts of education. In order to make decisions on how to stay current and assist the global community and students in the following years, teachers must be knowledgeable of the upcoming technology and how to use it. According to Kolenick & Patterson (2018), the necessity for lifelong learning is increasing significantly around the globe, as to get relevant jobs, people need to obtain modern and appropriate education.

The utilization of technology in the era of the fourth industrial revolution as a tool and medium of instruction will harmonize with the powerful learning environment. It will transform the educational process of learning and teaching so that learners are able to gain knowledge in a constructive and active way (Ahmad *et al.*, 2019)<sup>[12]</sup>. The technology of the fourth industrial revolution is not only considered a tool that can be added to existing teaching methods but is also nowadays seen as a modern instrument to enhance (Razak, Alakrash, & Sahboun, 2018) and support new ways of learning and teaching processes. In the Fourth Industrial Revolution, technology will be integrated into learning and teaching processes in various educational institutions around the world. The use of fourth industrial revolution technology in the classroom is very important to provide opportunities for learners to learn and operate in the age of technology. How do teachers perceive their role in promoting digital literacy and responsible technology use among students in Education 4.0?

### Research Problem

The purpose of this study is to determine and discover the awareness of education 4.0 to the students after pandemic. This aimed to answer the question in this study:

1. To assess the Education 4.0 awareness of students.

### Scope and Delimitation

This study will look into students' awareness of education 4.0 after the pandemic. Thus, this study needed their perceptions about their awareness for Education 4.0, in which the researcher will have thirty (30) participants.

This study will be conducted at the Cebu Normal University-Main Campus. The respondents are students under the College of Teacher Education.

The limitation of this study is that it focuses only on whether the students are aware of the new applications in Education 4.0.

### Significance of the Study

The study focuses on the awareness of education 4.0 to the students after pandemic.

The following will be the beneficiaries to the study.

**Respondents:** The respondents are the main focus of this study because they stand to gain the most from it. This study will be very beneficial to them because it will make them aware of education 4.0.

**Students:** It is to let them know that there are alternative ways of using apps in terms of making projects, questionnaires, and reports. It emphasizes the use of advanced technologies such as artificial intelligence, virtual reality, and personalized learning platforms.

**School:** It will help the teacher and school to offer blended learning opportunities, combining traditional classroom instructions with online courses, digital courses, and interactive learning materials, providing students with more flexible and dynamic educational experiences.

**Researchers:** As 3rd year BECE students, the findings of this study will provide the researchers with the technical, cognitive, social, and emotional abilities required for 21st-century learning, as well as digital competencies for future jobs.

**Future Researchers:** The study's overall context and findings will guide and reference future researchers conducting related or similar studies.

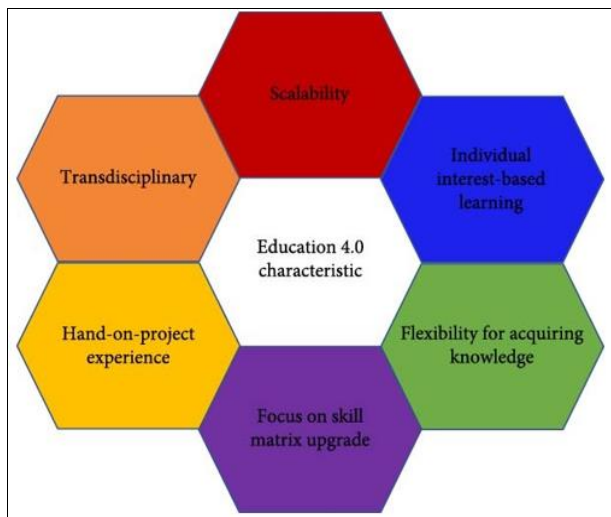
## 2. Review of Related Literature

### Related Literature

This chapter provides relevant research to reinforce and support the goals of this study. The following literature supports the claim.

### Transforming Learning to Online Education 4.0 during COVID-19: Stakeholder Perception, Attitude, and Experiences in Higher Education Institutions at a Tier-III City in India

Proponents of distance learning were quick to anticipate the end of the conventional educational model when all schooling moved digital at the start of the pandemic. Large institutions, on the other hand, believed that online delivery was a passing phase and that prospective learners would always pay more for an in-person, off-campus learning experience. The reality might lie someplace in the middle, and a hybrid paradigm may emerge in the future. Nonetheless, it is realistic to assume that institutions will continue to use the internet-based delivery approach refined during the pandemic in order to provide added value to students even after physical classes resume. Institutions that rejected distance learning as a fad or saw it as a temporary solution are racing against the clock to prepare their operations to offer value. Aside from the obvious research into the advantages and disadvantages of online distribution, it is critical to examine stakeholder experiences and viewpoints in an entirely online delivery model throughout the epidemic, a period of high uncertainty and worry. Insights gathered from such research across varied environments can assist schools in better meeting the requirements of professors and students. Fig 1 depicts an Education 4.0 attribute. It asserts that it emphasizes individual goals through improving students' skills and taking into account student interests. With the education industry unlikely to open in India in the near future, institutions will want practical knowledge on how to improve their value impression in an entirely online interaction paradigm.



Characteristics of Education 4.0

### Hybrid Education in Higher Education on the Example of Students' Experiences in Post-pandemic Reality

The widespread adoption of online learning and earlier-traditional forms of learning has led to the creation of hybrid solutions in response to the SARS-CoV-2 pandemic's slow extinction. It is an intentional change because people are not entirely content with online education's total control, especially because it was launched during a time of need when it was necessary to use it simultaneously to deal with managerial and health risks. The enhancement of the university facilities enabling the implementation of online as well as blended solutions, the change in attitude, such as greater readiness of teachers and students to a more flexible choice of the educational mode, were all noted in ways similar to other universities.

Students studying medicine point out that the executed hybrid form has an issue with the remote mode predominating. The "hybrid form" may at times be used for distance learning functioning by a different name. It is difficult for students to combine these two modalities of learning without an appropriate learning structure. Because going on both sides between the institution and home is required, it is extremely challenging. It is also hard to speak with students about the correct method of learning too late. While some students were taking seminar classes stationary and remotely at the same time, it was viewed as an error. Due to these disadvantages, a large number of students would prefer not to pursue this type of education, particularly in terms of practical classes. However, students appreciate having the opportunity to participate in some of the online classes, particularly the ones that deal with practical subjects. These can also be performed more quickly as part of stationary classes. It is a great way to conduct practical lessons for some students. Students' perspectives are not always straightforward and are influenced by their experiences in this field. In the hybrid mode, it's crucial to combine the best aspects of traditional education and technological educational solutions. This type of instruction has four characteristics: it combines individual and group learning, synchronous and asynchronous, independent and group learning, formal and non-formal learning, and synchronous and asynchronous learning. Compared to e-learning, hybrid learning encourages greater participation. The time, place, and pace of learning are mainly under the learner's control. The teacher continues to

have control over the educational process, including teaching. It is important to know what content is transmitted in-line vs online. Learners benefit from hybrid teaching because it teaches them how to manage their own time and helps them become more aware of their own learning preferences. People with mobility or availability issues can benefit from hybrid education since it combines formal and informal learning contexts and promotes diverse forms of collaboration. Investment is necessary for the implementation of hybrid education, including from the student.

### Students' Mobile Phone Practices for Academic Purposes: Strengthening Post-Pandemic University Digitalization

Numerous parts of colleges have changed as a result of digital technology, including how research is conducted as well as how students study, get their grades, and interact with their instructors and peers. Particularly since the COVID-19 epidemic, there has been an increase in the use of digital technology and approaches in education. Online learning is one aspect where the current pandemic might be seen as a turning point. Universities are becoming more digitized, and blended-hybrid and online distance learning are becoming more popular. While many college students adopted mobile technology-mediated learning and it encouraged online learning, the pandemic promoted the digital era of higher education.

Among other things, mobile learning (m-learning) is adaptable, accessible everywhere, supports adaptation, and has an educational and pedagogical potential that can benefit students. Anytime, anywhere, mobile phone/device use for education can help and improve the learning process. University students use mobile phones for a variety of tasks, including accessing course materials, downloading/reading books and supporting information from the internet, interacting with tutors, watching videos, and communicating with other students. Mobile phones have features like word processing, internet access, and e-mail. It is highlighted that due to the quick pace of technological change, today's university students (aged between 19 and 24) have grown up in a world that has always been digital and interconnected, which is different from the world of their parents and university lecturers. According to Prensky, "Today's students are no longer the people our educational system was designed to teach" and described this group as digital natives, arguing that they use digital technology differently in comparison to prior generations, who he refers to as digital immigrants. Digital natives adopt mobile phone use for their studies, and make extensive use of the internet via their mobile phones.

### Digital Transformation towards Education 4.0

Technological, human, organizational, and pedagogical drivers are used in concert to support and steer the digital transformation of teaching processes. Education 4.0 seeks to prepare students for the demands of the Fourth Industrial Revolution and global issues, like reducing the causes and effects of climate change based on people's awareness, by providing them with a variety of skills, including cognitive, social, interpersonal, and technical ones. In order to meet the goals of Education 4.0, this work presents the development and testing of a method known as TADEO, which stands for Transformação Digital na Educação (digital transformation

in education). This method will help groups of educators driving this change in education design and implement teaching and learning experiences. Through the development of projects to mitigate environmental problems caused by anthropogenic action, the TADEO method was implemented in elementary and higher education basic subjects classes to increase students' understanding of climate change and to exercise the hard and soft skills required by 21st century learning and work. The anticipated goals have been achieved, according to the evaluations of teachers and students who took part in TADEO-guided teaching and learning activities.

#### **Education 4.0: Are Students Aware and Ready for It?**

The Oxford Dictionary defines education as an enlightening experience and the process of receiving or providing systematic instruction, particularly at a school or university. The word comes from the Latin *educare*, which dates back to the sixteenth century. There is no denying the importance of education in our lives. Three types of educators typically make up an adult's life: parents, teachers, and lecturers. We socialize through education. Education is the main means by which children can acquire the norms, values, and skills necessary to participate in society. Respect for authority, patriotism, timeliness, individualism, and competition are some of these norms and values. It is beyond dispute that individuals need to adhere to a shared set of values and beliefs. Opportunities to integrate their social skills are provided by education. We think that students can become more innovative through education. It gives brilliant scientists and artists the fundamentals they need to unlock their creativity and contribute their brilliant ideas to the creation of the modern world.

#### **Factors Influencing Students' Behavior and Attitude towards Online Education during COVID-19**

A faster transition to the new phase of Education 4.0 was made possible by the pandemic. Online learning served as a means of preserving analog technology while introducing digitalization as a useful substitute under the mandated circumstances. According to Frecker and Bieniarz, online learning is the next major shift in education. The range of instructional options and the variety of content placements are two of these benefits. In terms of assessment, there is also a lot of variation because teachers can administer tests that are summative or continuous. According to an evaluation by Bond, Lockee, and Jackson, online professional development courses should be required for higher education faculty members teaching online. Regarding the effect on students, it was advantageous to consider their hobbies and the instructors' wish to offer additional online courses in the future (Elzainy *et al.*). Since 2016, a new vision for higher education has been developed. McGee *et al.* have presented this concept, emphasizing the importance of preparing online teaching faculties and instructors for online instruction. The idea of self-paced training for academic personnel was developed by Rhode and Krishnamurthi as a result of the expanded vision. Iwai conducted research on the effects of virtual reality and adaptive learning in virtual classrooms during the pandemic, taking into account the staff and students' increased skill levels and level of satisfaction.

#### **Online Education in Times of the Pandemic: A Quantitative Study of the Learning Experiences Among Filipino Pre-Service Language Teachers**

An unusual trend in education has gained popularity in recent years, primarily as a result of the pandemic and its effects on all facets of human existence. The increase in Covid-19 cases was identified as the worst problem facing the education industry. It compelled academic institutions worldwide to abandon traditional, in-person classroom instruction in favor of internet-based distance learning, even though neither students nor teachers were prepared for this new mode of instruction. Over a year has passed since the pandemic first appeared, but little is known about the online education experiences of Filipino pre-service teachers. Using the College Student Learning Experience Survey (CSLES), an online survey created by Zhang and Zhou (2021), this study aims to explore and comprehend the learning experiences of 91 Filipino pre-service teachers, especially those who majored in the English language. According to the findings, the pre-service teachers were able to benefit from good learning opportunities in their online courses. This is demonstrated by the respondents' high degree of learning satisfaction, as well as by their favorable opinions of their learning communities and the assistance they felt from their peers. In spite of this, it was also stated that the majority of aspiring teachers reported feeling depressed and anxious during their online courses. Furthermore, poor learning environments, power outages, and problems with internet connectivity and the absence of necessary electronic devices among many students were mentioned as the main issues or difficulties that the aspiring teachers faced during their virtual class sessions. Lastly, a correlation between the respondents' perceptions of learning satisfaction and student support and the universities they were enrolled in was also discovered. It was also discovered that the respondents' year level significantly impacted how they perceived the learning community and their entire learning process.

#### **3. Methodology Research Design**

In this study, the descriptive method will be used to collect data to determine students' awareness of Education 4.0 after the pandemic. With the help of the research questionnaire that the researchers made, this will aim to gather and analyze numerical data and also can be used to find patterns and make predictions and results.

#### **Flow of the Study Research Environment**

This study will be conducted at Cebu Normal University-Main Campus College of Teacher Education, where the respondents are admitted. The school has several courses to offer. It is located at Osmeña Boulevard, Cebu City, Philippines. It is considered a Level IV Accredited (AACCUP), Center of Training (COT), and Center of Excellence (COE) school in the Central Visayas region.

#### **Research Respondents/Participants**

The respondents to this study will be 30 students under the College of Teacher Education. To determine the total sample size of the study, the researchers will use a simple



random sampling method.

**Research Instruments**

This study will use (adopted) researcher-made questionnaires to be completed by the respondents. The data gathered from the instrument will be used to determine the awareness of Education 4.0 among the students after the pandemic. The information will also provide answers to the question in the statement of the problem.

**Data Procedure**

To acquire primary data, a survey will be used. In this process, participants must answer the questions honestly and accurately. The collected data will be analyzed using numerical data.

**Data Gathering**

The researchers will send a letter requesting the approval of the CNU-Main Campus Director to conduct the research. When the request to conduct the research is granted, the researcher will use the online platform to disseminate the questionnaires to the respondents. Each item in the questionnaire will be explained extensively so that the respondents will understand the nature and intent of the study.

**Data Analysis**

Descriptive statistics will be used to summarize, analyze, and interpret the data gathered from the respondents. According to the researchers, the percentage agreement ranges from 1-20% and does not use Education 4.0 at all. Percentage agreements range from 20–30% of seldom-used education 4.0. Sometimes it ranges from 30–40%, while percentage ranges from 40–50%, construed as always.

**Findings**

**Table 1:** Awareness of Education 4.0 to the students

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		%
NEVER	1	0	0	0	1	1	0	0	1	0	0.4	1.30%
SELDOM	0	3	0	4	8	3	4	2	2	2	2.8	9.30%
SOMETIMES	7	18	5	9	12	19	14	17	20	21	14.2	47.20%
ALWAYS	22	9	25	17	9	7	12	11	9	8	12.9	42.20%
<b>AVERAGE</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>		<b>100%</b>

(Q1) 73.3% of students are always using different applications in their online class. (Q2) 25 education students (83.3%) say that they always create their presentations using different applications. (Q3) Never and seldom show 0%, while sometimes has 16.7%. It shows here that most of the students answered Always since it has a percentage of 83.3 (Q4). 83.3% answered always, so basically, the majority of them used a flipped set-up in their online class, and no one responded Never. (Q5) 40% of the respondents sometimes use AI in assessing their academic research or assignments. (Q6) 73.3% of the students said that sometimes they used an electrical exam (Google Form) to conduct a quiz. (Q7) 46.7% of them answered that sometimes e-learning is embedded in their classroom activities. (Q8) 100% of the students use AI for proofreading and grammar in assignments. In (Q9), 20 students (66.7%) responded that they sometimes used AI to help them organize and prioritize their tasks. (Q10) In the last question, 70% of the students

answered sometimes, 6.7% said seldom, 26.7% said Always, and none said never.

The overall percentage of Cebu Normal University students who responded to the survey is displayed in Table 1. The outcomes of the overall findings showed that 47% of CNU education students are aware of Education 4.0. According to, Duffy (2008), the learners in the current study belong to “Internet Generation Z,” and when they were born, there was already modern technology around them. Thus, they can explore and get used to emerging technologies. It can be seen from the results that the students have proved their awareness by showing that they sometimes used platforms and applications available on the internet to support their learning development and, at the same time, realized the importance of the existence of technology in assisting them nowadays in making their work much easier in terms of making their presentations, outputs, searching and etc. Pierson (2001) emphasizes that the involvement of digital technology in the educational domain cannot be disconnected from effective teaching. That’s why, the emergence of modern technologies in the educational domain should be comprehensively used for enhancing the teaching-learning process; it can serve as a means for infusing good values in employing the technologies prudently among young children.

**Recommendation**

As researchers in connection with the study, instructors need to be well-versed in developing creative curricula and providing each student with a unique educational experience. It should be expected of them to facilitate learning rather than take the lead. For instance, educators need to be able to use their extensive knowledge to guide students while they go through their own personal journeys. According to Schleicher (2016), teachers need to use digital technologies in teaching and understand the accelerated development of the field of knowledge. Thus, the teacher was asked what chance he would use or recommend the experience in other projects, or classes. To this question, TeaExp2 replied that “yes I would definitely use or recommend it. The proposed model was widely accepted by the students” However, the result of this study sometimes got the highest rating, so it means that not all of them are aware of or have used the different applications in Education 4.0. In addition, this ability needs to expand, like international programs, cross-cultural competence, networking and professional development, and intercultural communication skills. If these programs are noticed by all stakeholders, administrators, and teachers, it is surely that the teachers will implement to the class what she learned during the workshops and the students will learn about adapting to different resources or different educational applications.

<https://files.eric.ed.gov/fulltext/EJ1347756.pdf>

**Ethical Considerations**

In fulfilling the objectives of the study, the researchers will observe the following terms and conditions:

**Conflict of Interest**

This study aims to improve the advancement of technology among students, so basically, there are no joining forces in this result of the study.

**Privacy and Confidentiality**

In the case of gathering personal data from the respondents, data will only be gathered to further the study and will not be used for any other purposes. The researcher and/or researcher team will ensure confidentiality is applied.

**Informed Consent**

The respondents were completely aware of the purpose and procedure for assessing the OLMS. One section of the Google form was utilized to request consent. In the Google form, there were some explanations. Ticking ``yes`` on the consent form signifies all participants were fully informed about the study. In addition, it acts as proof that no teacher was coerced into taking part in the study.

**Risks**

There are no known dangers to the participants in this study. We will use Google Forms to create questionnaires that are easier for respondents to complete and more convenient for us to collect the data.

**Recruitment**

The inclusion criteria created by the researchers were used to choose the research participants. The participants were informed of the study's implementation process from the very beginning to the end.

**Benefits**

This study will be beneficial to the respondents. When this research will be out and published in journals.

**Incentives**

Non-monetary incentives were given to the participants after they answered the questionnaires. We just valued their hard work in answering the questions by simply saying "thank you" to the participants who honestly answered the questions.

**Collaborative study terms of reference**

This research does not contain any terms related to collaborative studies.

**Definition of Terms**

The following terms are now defined operationally in the context of this study for clarification and further understanding.

**Education**

The process of receiving or giving systematic instruction, especially at a school or University.

**Awareness**

A state wherein a subject is aware of some information when that information is directly available to bring to bear in the direction of a wide range of behavioral actions.

**Technology**

The use of scientific knowledge for practical purposes or applications, whether in industry or in our everyday lives.

**Education 4.0**

The period in which education settings integrate ICTs to develop instructional, pedagogical, and technological processes.

**Fourth Industrial Revolution**

Refer to the current era of connectivity, advanced analytics, automation, and advanced manufacturing technology that has been transforming global business for years.

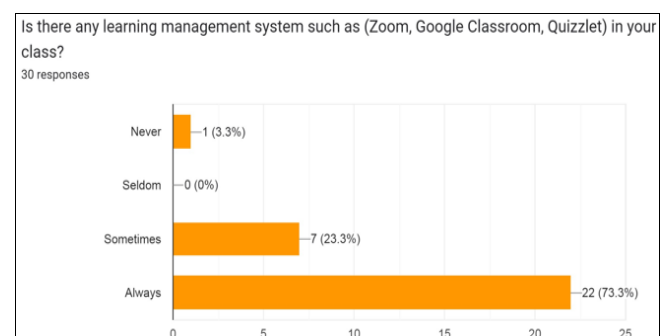
**Appendix**

**Table 1:** Research Questionnaire

	<b>Education 4.0</b>	<b>Never (1)</b>	<b>Seldom (2)</b>	<b>Sometimes (3)</b>	<b>Always (4)</b>
1	Is there any learning management system such as (Zoom, Google Classroom, Quizzlet) in your class?				
2	How often do you come across AI-powered language translation tools in daily life?				
	<b>Education 4.0</b>	<b>Never (1)</b>	<b>Seldom (2)</b>	<b>Sometimes (3)</b>	<b>Always (4)</b>
3	How often do you use power-point, canva, or any kind of application in creating a presentation?				
4	Are your teachers often doing flipped (video lectures, using smart tv's, etc) classroom set-up while teaching?				
5	How often do you use AI to assist with your academic research or assignments?				
6	Are there any electrical exam system used in your class in conducting your exams and quizzes?				
7	Is there e-learning embedded in your classroom activities effectively?				
8	How often do you use AI for proofreading and grammar checking of your written assignments?				
9	How often does AI help you organize and prioritize your tasks and deadlines?				
10	Are you flexible enough in using education 4.0?				

**Scoring Guidelines**

Rate	Description	Qualifying statement
1-2.5	Never	Does not use education 4.0 at all
2.51-5	Seldom	Used online platforms very often
5.1-7.5	Sometimes	Occasionally using technology
7.6-10	Always	Consistently using online platforms



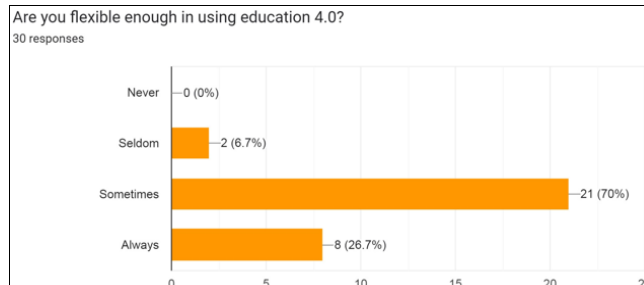
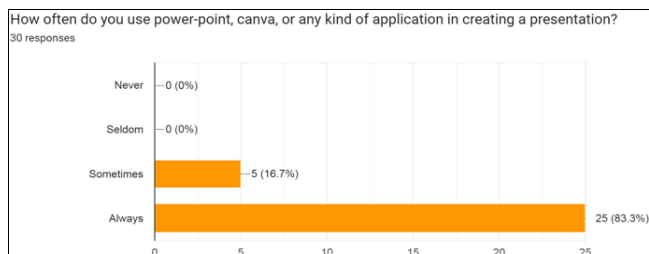
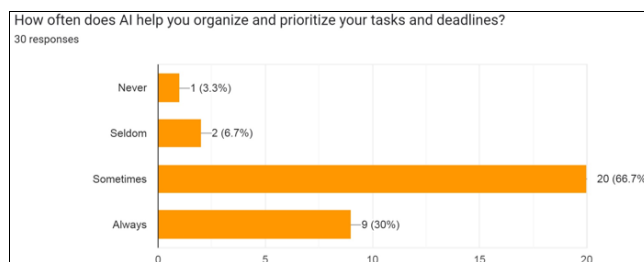
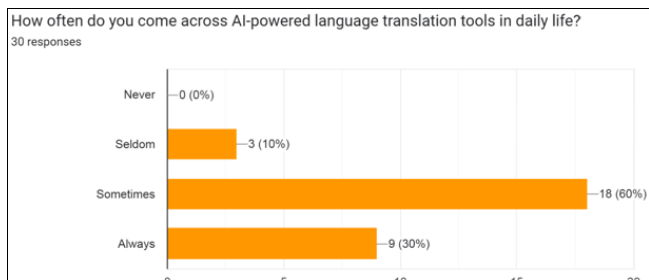


Fig 1

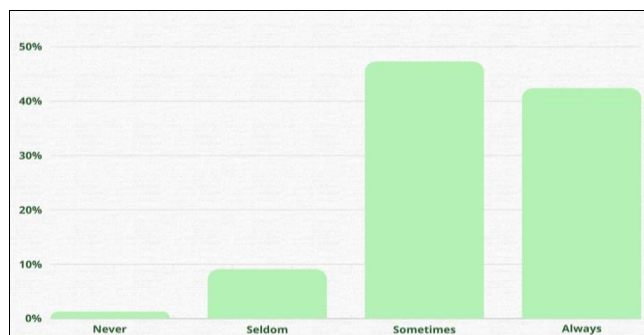
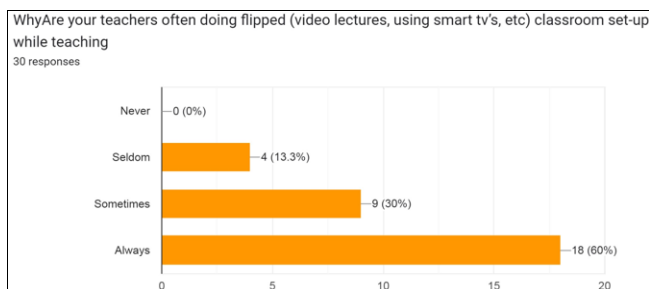
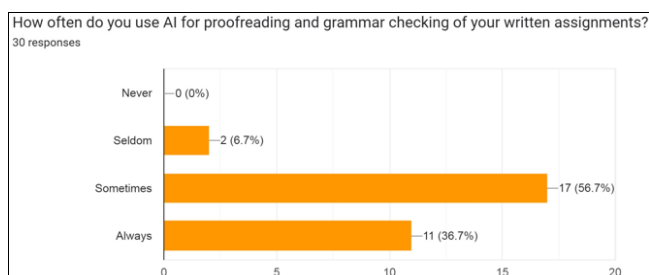
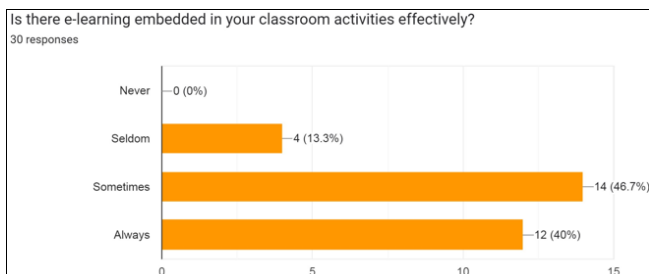
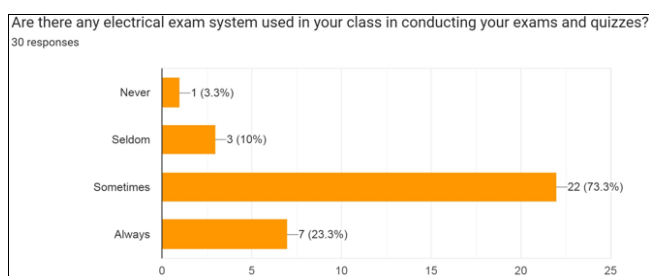
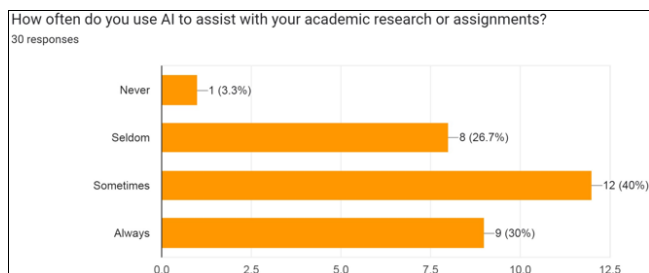


Fig 2



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