



## Investigating Teachers' Attitudes towards the Alignment between Test Administration Modes and Sustainable Development Goals

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### Abstract

This study aims at investigating teachers' attitudes towards the alignment between modes of test administration and the Sustainable Development Goals (SDGs) especially goals 4, 12 and 15. The research design is applied, quantitative, and exploratory. The sample of the study consists 70 teachers. A questionnaire is used in this study. The researcher used the questionnaire to investigate the teachers' perception towards which mode of test administration is more aligned with the SDGs 4, 12 and 15. The results reveal that online tests are more aligned with the Sustainable Development Goal 12 and Goal 15 than paper-based tests. In addition, both online tests and paper-based test are aligned with Sustainable Development Goal four. This research suggests shifting to online tests instead of paper-based tests at not only colleges, but also schools in conducting formative assessment. Future research should aim to explore the attitudes of stakeholders, such as educators, employers, and policymakers, towards both online and paper-based tests.

**Keywords:** attitudes, mode of test administration, motivation, SDGs.

## دراسة استقصاء آراء المعلمين تجاه التوافق بين طرق إدارة الاختبارات وأهداف التنمية المستدامة

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### المستخلص:

تهدف هذه الدراسة إلى استقصاء آراء المعلمين تجاه التوافق بين أساليب إدارة الاختبارات وأهداف التنمية المستدامة، خاصة الأهداف ٤ و ١٢ و ١٥. يعتمد تصميم البحث على النهج التطبيقي، الكمي، والاستكشافي حيث أنه يتألف عينة الدراسة من ٧٠ معلمًا. تم استخدام استبيان في هذه الدراسة للتحقق من تصورات المعلمين حول أي من أساليب إدارة الاختبارات أكثر توافقًا مع الأهداف ٤ و ١٢ و ١٥ من أهداف التنمية المستدامة. تكشف النتائج أن الاختبارات عبر الإنترنت تتماشى بشكل أكبر مع الهدفين ١٢ و ١٥ من أهداف التنمية المستدامة مقارنةً بالاختبارات الورقية. بالإضافة إلى ذلك، تتماشى كل من الاختبارات عبر الإنترنت والاختبارات الورقية مع الهدف الرابع من أهداف التنمية المستدامة. توصي هذه الدراسة بالتحول إلى الاختبارات عبر الإنترنت بدلاً من الاختبارات الورقية ليس فقط في الجامعات، ولكن أيضًا في المدارس عند إجراء التقييم التكويني. يجب أن تركز البحوث المستقبلية على استكشاف مواقف أصحاب المصلحة، مثل المعلمين وأصحاب العمل وصانعي السياسات، تجاه كل من الاختبارات عبر الإنترنت والاختبارات الورقية.

**الكلمات المفتاحية:** المواقف؛ أسلوب إدارة الاختبارات؛ الدافعية؛ أهداف التنمية المستدامة.

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### Introduction

Assessment is essential for achieving teaching goals. It is used to collect information about the students and analyze them to observe the progress made towards reaching desired educational goals. The main goal of assessment is to analyze students' performance and promote learning in order to modify teaching. Assessment also helps in finding the gaps in learning to provide feedback that leads to improvement, as it is considered an ongoing process that is used incidentally and deliberately to assess students. In addition, one of the biggest obligations and difficulties facing higher education in the first decade of the 21st century is related to promoting sustainability.

The declarations on sustainability in higher education began promoting sustainability in universities ( Michelsen, 2015) which led higher education institutions to exert significant efforts in the restructuring learning and teaching practices in order to be aligned with the Sustainable Development Goals (SDGs) (Barth et al., 2015). SDGs are a set of global goals that aim at promoting the welfare of both individuals and the environment. Sustainable Development Goal 4 is related to education and it reinforces using digital technologies (Sinha & Bagarukayo, 2019). This goal has been ignored until the widespread of COVID-19 that led all educators to adopt e-learning practices (Wang et al., 2022). Other sustainable development goals also are concerned with the sustainable consumption and production patterns (SDG 12) and the protection of the ecosystems (SDG 15). These goals encourage using eco-friendly practices and raise students' awareness of environmental issues (Shishakly et al., 2024). As a result, it is important to ensure that the modes of test administration are aligned with the SDGs.

Reviewing the literature, it is obvious that researchers intended to understand teachers' attitudes toward modes of test administration (online tests and paper-based tests)(Abduh, 2021; Khadka et al., 2020). However, none of the researchers tried to investigate which mode of test administration (online tests or paper-based tests) is more aligned with the Sustainable Development Goals.

Given the above-mentioned premises, the aim of this research is to investigate which mode of test administration (online tests or paper-based tests) is more aligned with SDGs 4, 12 & 15. This research is significantly important for many reasons. Investigating which modes of test administration (online tests and paper-based tests) is more aligned with the SDGs contributes to accomplishing the United Nations' 2030 Agenda for Sustainable Development goals. In light of this background, the study attempts to answer the following question:

Which mode of test administration is more aligned with SDGs 4, 12 & 15?

In an attempt to answer this question and address the aim of the study, it is important to elaborate on the theoretical background of assessment.

## **Literature Review**

This research aims at exploring teachers' perceptions towards the alignment between two modes of test administration (online tests and paper-based tests) and the Sustainable Development Goals. As a result, it is imperative to present a theoretical background on assessment highlighting the urge to shift from face-to-face education to distant education. It also sheds light on the SDGs and various models that address attitudes. In addition, a look at prior related studies on teachers' attitudes towards various test administration modes and studies on the alignment between the modes of test administration and the SDGs are presented.

### **2.1 Face-to-face education and distant education**

The urge to shift from face-to-face education to distant education and online assessment has occurred as a result of COVID-19 pandemic (Montenegro-Rueda et al., 2021). COVID-19 emerged from Wuhan city of China at the end of December 2019 (Chahrour et al., 2020). The outbreak of COVID-19 spread rapidly and became a global threat (Spina et al., 2020). By 2020, March 29 more than 177 countries had been affected by the virus and more than 722,435 people were infected leading to a death toll exceeding 33,997 (Dong et al., 2022). Viner et al. (2020) states that COVID-19 global pandemic made it hard for almost all educational institutions to conduct tests at that time. He adds that the educational system has been affected by this pandemic as COVID-19 forced

about 107 nations to shut down schools and universities by March 18, 2020. In addition, the UNESCO estimated that COVID-19 affected 862 million children and young people, which means half of the global student population (Nearchou et al., 2020). So, educators have tried to search for other alternatives to face-to-face teaching and paper-based tests.

## 2.2 Assessment and tests

Educators manage to differentiate between assessment and tests. On the one hand, Brown and Abeywickrama (2018) state that assessment is an ongoing process that is done by teachers to assess the students' performance while they are responding to a question, offering a comment, or even trying out a new word or structure. They add that assessment can come in many types and forms. It can be formative, which monitors students' progress while they are learning the new content during a lesson, unit, or course. It can be summative, which evaluates students and takes place at the end of an instructional unit such as final exams (Brown & Abeywickrama, 2018). In addition, Prisacari (2017) states that tests can be delivered on paper or on computers.

Dixson and Worrell (2016) add that assessment can be interim which occurs after a longer period such as a chapter test. They add that tests help in making decisions about the test-takers and the material used. For Perry Jr (2011), tests are tools that are designed to assess what students can remember or do. Furthermore, Brown and Abeywickrama (2018) define tests as ways that help educators to measure not only the learner's ability, but also their knowledge and performance in any given domain. They add that assessment is considered a wider domain that encompasses tests, and tests are subsets of assessment (Brown & Abeywickrama, 2018). Prisacari (2017) states that tests can be delivered on paper or on computers.

## 2.3 Sustainable Development Goals

Sustainability focuses on meeting the social, economic, and environmental requirements of the present generation while preserving the natural resources for use by future generations ( Hansen et al., 2016). According to the United Nations Educational Scientific and Cultural Organization (UNESCO) (2016), Sustainable Development Goals (SDGs) are a set of global goals that are intended to support the well-being of people as well as the planet. They include

17 goals, 169 targets and 232 indicators. Goal four which focuses mainly on universal education is called Education for Sustainable Development Goal (ESDG).

SDGs vary to address different needs. In the period between 2005 and 2014, the United Nations Decade of Education for Sustainable Development (DESD) focused on social and economic aspects of sustainability. On the other hand, 2017's UNESCO Education for sustainable development goals shed light on quality education, and that every learner should acquire the knowledge and skills needed to promote sustainable development (United Nations, 2017).

As for the 2023 United Nations Sustainable Development Goals Report, using digital technologies is considered to be one of the essential goals (Sinha & Bagarukayo, 2019). The report states that "to deliver on Goal four, measures such as making education free and compulsory, increasing the number of teachers, improving basic school infrastructure and embracing digital transformation are essential" (United Nations, 2023). As a result, educational literacy evolves from mere reading, writing, and mathematics proficiency to encompass a deeper understanding beyond mere memorization (Al-Kuwari et al., 2021). Education literacy aims for literacy on different levels such as research and information, digital media, creativity and critical thinking (Al-Kuwari et al., 2021). As a result, the educational curriculum should be aligned with the SDGs (Agyeman, 2005; Kopnina, 2018). This shows that Education for Sustainable Development is implemented through not only education efforts, but also through environmental, social, and economic efforts as well (Ullah & Ali, 2021).

#### **2.4 Education for Sustainable Development Goals (ESDG)**

According to Kopnina (2020), ESDGs have found their way because of the Millennium Development Goals. He adds that these goals were developed based on the Brundtland Report that was published by the World Commission on Environment and Development in 1987. Goal four outlines the goals and objectives of lifelong learning. It is related to education and it reinforces using digital technologies (Sinha and Bagarukayo, 2019). This goal has been ignored until the widespread of COVID-19 that led all the educators to adopt e-learning practices (Wang, et al., 2022). Other sustainable development goals also are



concerned with the sustainable consumption and production patterns (goal-12) and the protection of the ecosystems (goal-15). Shishakly, et al. (2024) state that these goals encourage using eco-friendly practices and raise students' awareness of environmental issues.

According to the UNESCO Institute for Lifelong Learning, lifelong learning is the term used to describe all learning activities carried throughout the course of a person's life with the goal of enhancing knowledge, skills, and competences from a personal, civic, social, and employment-related viewpoint (2015). Goldney, et al. (2007) mentions that bringing this nature of sustainability into students helps in saving the resources for future use. As a result, Shishakly, et al. (2024) posit educational institutions worldwide have included online learning components and implemented technology into teaching in order to promote sustainability in education.

According to Albareda-Tiana, et al. (2018), the biggest obligations and difficulties facing higher education in the first decade of the 21st century is related to promoting sustainability. Barth, et al. (2015) adds that promoting sustainability in universities led higher education institutions to exert significant effort in the restructuring learning and teaching practices in order to be aligned with the Sustainable Development Goals (SDGs). As a result, it is important to ensure that the modes of tests administration are aligned with the SDGs.

## **2.5 Previous related studies**

### **2.5.1 Studies on attitudes towards different test administration modes**

Researchers aim to understand teachers' perceptions of one of these test administration modes (online tests) highlighting the challenges that teachers face while assessing students online. In one of the studies, a total number of 26 EFL teachers at Najran University in Saudi Arabia participated (Abduh, 2021). The researcher used two tools in his study which are a questionnaire and WhatsApp application. Abduh developed an online questionnaire on Google Forms about the challenges of online tests. The questionnaire consists of open-ended and close-ended questions asking about the types of assessment that the teachers follow in their online assessment. It also gathers information about the teacher's knowledge regarding online assessment strategies and their satisfactions in using online assessment. In addition, the questionnaire asks about

the challenges that teachers face in online assessment. The second tool that the researcher used in his study is WhatsApp application. He used it in order to conduct interviews with teachers to investigate more about the challenges of online assessment. The results of this study show that teachers have moderate attitudes towards online tests. On the other hand, it indicates that teachers face serious challenges in assessing students online.

Several studies in the literature reported teachers' dissatisfaction with online assessment due to the cheating problem (Harmon & Lambrinos, 2008; King et al., 2009; Watson & Sottile, 2010; Yilmaz, 2017). These studies investigate whether the mode of assessment format (proctoring) affects test scores in online tests or not. In one of the studies, the participants were studying at School of Continuing Studies at the University of Connecticut in the online division taking principles of macroeconomics class during summer 2004 and 2005 (Harmon & Lambrinos, 2008). Although the courses that they studied were the same, the mode of assessment format was different. Students who took their online final test in 2004 were not proctored while students who took their online final test in 2005 were unproctored. The researcher suggested a model that predicts the scores for each group. The results show that unproctored tests lead to cheating (Harmon & Lambrinos, 2008).

In another study, the researcher investigates the extent of cheating in both online and paper-based tests from college student's perspective (King et al., 2009). The participants were 121 undergraduate students studying business. The students declare that it is easier to cheat while taking online tests than paper-based tests (King et al., 2009). These results are also confirmed in (Watson & Sottile, 2010). The researchers designed and used an academic dishonesty assessment survey that consists of 44 yes/no and multiple choice statements asking about various topics such as the participants' gender, their academic class, and topics related to academic dishonesty. The participants were 635 undergraduate and graduate students from various colleges and schools. The results of the study show that cheating happens more frequently in online tests than in paper-based tests (Watson & Sottile, 2010).



Researchers add that there are challenges with internet access, electricity problems, and a lack of training and skills to handle the technology (Dhital, 2018; Fluck et al., 2017; Ilgaz & Afacan Adanır, 2020; Khadka et al., 2020). Other challenges face the teachers while conducting online tests like academic dishonesty, infrastructure, coverage of learning objectives, and students' commitment to submit assessment tasks (Guangul et al., 2020).

### **2.5.2 Studies on mode of tests administration and SDGs**

The literature shows that none of the studies have investigated which mode of test administration (online tests and paper-based tests) is more aligned with the SDGs. This means that there haven't been any studies that specifically looked into whether online tests or paper-based tests are more in line with the Sustainable Development Goals (SDGs).

## **Methodolog**

Chapter three outlines the steps taken to obtain the findings and results, along with a comprehensive depiction of the participants, data overview, and the research tools utilized.

### **3.1 Research design**

The main aim of this research is to explore teachers' perceptions towards which mode of test administration is more aligned with the Sustainable Development Goals (SDGs) especially goals 4, 12 and 15. This research is applied, quantitative, and exploratory research. It is applied because it is directly applicable to teaching and learning situations. It follows a quantitative approach to data analysis as it uses inferential statistics in analyzing the data collected from the questionnaires.

### **3.2. Participants**

A total number of 70 teachers participated in the study to investigate which mode of test administration is more aligned with the SDGs. 59.1% of the participants stated that they have been working in the field of teaching for more than ten years. A number of 46 representing 65.7% of the participants stated that they were working as general English language teachers at schools. A number of 24 ESP instructors representing 34.3 % were working at colleges,

and a number of 6 representing 8.6% at other educational organizations like language institutions, and a number of 3 representing 4.3% of the teachers stated that they worked remotely. Although they come from various backgrounds, they stated that they used online tests as being exposed to online tests was one of the requirements to take the questionnaire.

### 3.3 Instruments

The researcher used an SDGs' questionnaire to reach to the findings (Appendix A). It aimed at investigating which mode of test administration (online tests or paper-based tests) was more aligned with the SDGs' especially goals four, 12 and 15. It was designed by the researcher based on United Nations' 2030 Agenda for Sustainable Development. In addition, the questionnaire's items were developed based on the principles of designing questionnaires as outlined in the studies by Perry Jr (2011, 35) and Yaddanapudi and Yaddanapudi (2019, 72-73). It was conducted via Google Forms. The questionnaire consisted of two parts. The first part was the demographics section, consisting of only two questions asking about the participants themselves, specifically where they worked and the years of experience they had. The second part of the questionnaire addressed different SDGs such as goal four, goal 12 and goal 15, and it consisted of seven questions. The participants were supposed to answer that best described their opinion concerning online tests and paper-based tests. The questionnaire takers had to choose between online tests, paper-based tests or both online and paper-based tests. The first and second questions addressed Goal four. The primary focus of this goal is on education, with its primary aim to guarantee fair access to high-quality education. It also encourages opportunities for lifelong learning for everyone. As a result these questions explored which mode of test administrations ensured affordable education and increased the youth and adults' skills. The third and fourth questions address Goal 12 which is concerned with the sustainable consumption. It encourages adopting sustainable practices and reducing waste. These questions uncovered which one of the two test administration modes reduced waste and ensured sustainable consumption and production patterns. The fifth question addressed goal 15 which was mainly concerned with the ecosystems and reducing the degradation of natural habitats. It examines which one of the two test administration modes reduces the degradation of natural habitats.

### 3.3.1 SDGs' questionnaire administration procedures

The researcher used SDGs' questionnaire (Appendix B) to examine which mode of test administration was more aligned with SDGs especially goals four, 12 and 15. After designing the questionnaire and evaluating its validity and practicality, the researcher sent the questionnaire via Google Forms to several teachers who come from various backgrounds with varied work experience. He asked them to take the questionnaire only if they used online tests to examine their students. For those who were not exposed to online tests before, he asked them to neglect the questionnaire. After that, the responses to the questionnaire were analyzed and interpreted afterwards.

## 4. Findings and discussion

The data analysis is divided into three sections as follows. The first section addresses the alignment between the two modes of test administration and SDG4. The second section addresses alignment between the two modes of test administration and SDG12. The third section addresses the alignment between the two modes of test administration and Goal 15. This is illustrated in Tables 1, 2 and 3.

Table 1: Modes of test administration and goal four

Questions	Online tests		Paper-based tests		Both		Mean rank
	No.	%	No.	%	No.	%	
This mode of test administration ensures affordable education.	26	37.1	18	25.7	26	37.1	2.0
This mode of test administration increases youth's and adults' skills.	28	40	11	15.7	31	44.3	2.041

Table 1 illustrates which mode of test administration is more aligned with goal four, which is concerned with education. For statement 1, 37.1 % of teachers state that online tests ensure affordable education. In addition, the same number of teachers, which is 37.1%, declare that both online tests and paper-based tests ensure affordable education. On the other hand, 25.7% of teachers believe that paper-based tests is the mode of tests administration that ensures affordable education. The mean rank here is 2.0. As for statement 2, 40 % of teachers declare that online tests increase the number of youth and adults,

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whereas 11 % of teachers felt the same towards paper-based tests, and 44.3% agree that both paper-based tests and online tests increase the number of youth and adults. The mean rank here is 2.041. These results show that both online tests and paper-based tests are aligned with Goal four as both of them ensure affordable education. In addition, they increase the number of youth and adults who have relevant skills, including technical employment.

Table 2: Modes of test administration and SDG 12

Questions	Online tests		Paper-based tests		Both		Mean rank
	No.	%	No.	%	No.	%	
This mode of test administration reduces waste.	51	72.9	9	12.9	10	14.3	1.41
This mode of test administration encourages schools and colleges to adopt sustainable practices and to integrate sustainability information.	41	58.6	8	11.4	21	30	1.71

Table 2 illustrates which mode of test administration is more aligned with SDG12 which is concerned with reducing waste and sustainable consumption. It is obvious that 72.9% of teachers agree that online tests reduce waste. While 12.9% of teachers agree that paper-based tests reduce water, 14.3 % agree that both online tests and paper-based reduce waste. The mean rank here is 1.41.

As for statement 4, 58.6% of teachers claim that online tests encourage schools and colleges to adopt sustainable practices and to integrate sustainability information. The mean rank is 1.71. These results show that teachers believe that online tests also are aligned with SDG 12 as they do not produce any kind of waste. Teachers also believe that online tests adopt sustainable practices while conducting tests.

**Table 3: Modes of test administration and SDG 15**

Questions	Online tests		Paper-based tests		Both		Mean rank
	No.	%	No.	%	No.	%	
This mode of test administration helps in reducing the degradation of natural habitats.	51	72.9	7	10	12	17.1	1.44

Table 3 illustrates which mode of test administration is more aligned with SDG 15 which is concerned with the ecosystem. It is obvious that 72.9 % of teachers agree that online tests help in reducing the degradation of natural habitats. The mean rank is 1.44. This shows that online tests also aligned with Goal 15 as they help in reducing the degradation of natural habitats by reducing cutting trees to make paper that is used to conduct paper-based tests.

Finally, the results of the questionnaire show that online tests are more aligned with SDG 12 and SDG 15 than paper-based tests. In addition, both online tests and paper-based test are aligned with SDG 4.

### **Limitations and suggestions for future research**

There is only one limitation of this study that needs to be addressed in future studies. This study investigated teachers' perceptions towards which mode of test administration (online tests or paper-based tests) is more aligned with SDGs 4, 12 & 15. Therefore, future research should aim to explore the attitudes of stakeholders, such as educators, employers, and policymakers, towards both online and paper-based tests.

The present study recommended shifting to online tests instead of paper-based tests at not only colleges, but also schools in conducting formative assessment for many reasons. Online tests align with eco-friendly practices, reducing paper waste, carbon emissions, and environmental footprint associated with paper-based tests. As a result, by reducing the reliance on paper-based tests, online tests contribute to environmental sustainability efforts. In addition, shifting to online tests eliminate the need for paper-based test sheets, physical test centers, and manual grading processes. Educators can create, administer, and grade tests digitally, saving time and resources. The study also revealed that students have positive attitudes towards online tests.

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