Gateway to Green-Collar Talents: the Practice of Sustainability Reports

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Abstract: Under the UN SDGs initiative, a pressing demand for sustainable professionals has prompted a paradigm shift in educational courses to address real-world challenges. This paper aims to highlight the pivotal role of educational institutes, particularly colleges, in cultivating essential sustainability skills. These skills are crucial to nurturing the growth of future sustainability professionals, effectively bridging the gap between higher education and the evolving needs of the business sector. This paper introduces an innovative learning model designed to enhance student motivation and improve learning outcomes. The model is exemplified through a one-day, six-hour workshop involving 33 students. The workshop employs a hands-on approach by immersing students in real-world sustainability report practices. The objective is to guide them through the comprehensive process of organizing a sustainability report, thereby fostering a practical understanding of sustainable principles. The workshop's impact on student motivation and learning outcomes is systematically evaluated through a post-workshop questionnaire. The findings indicate a high level of engagement among participants, coupled with measurable improvements in learning performance. These outcomes not only validate the effectiveness of the proposed learning model but also align with the broader objectives of the understanding of reporting guidelines including GRI and SASB. This paper underscores the significance of reshaping educational approaches to meet the demands of a sustainable future. By showcasing a practical and innovative learning model, we aim to contribute to the development of skilled sustainability professionals.

I. INTRODUCTION

In 2015, the United Nations announced 17 Sustainable Development Goals (SDGs) and 169 targets to be achieved before 2030, including the three main axes of social progress, economic growth, and environmental protection, guiding the world to work together toward sustainable responsibility. In 2019, the Executive Yuan of Taiwan announced the Taiwan Sustainable Development Goals, which include 18 core goals, 143 specific goals and corresponding indicators. Many cities have also developed their own SDGs strategic plans from the perspective of urban governance, and put forward the SDGs Voluntary Local Review (VLR), which is a rolling review and tracking of various sustainability indicators [1].

In recent years, the issue of sustainable development has gained international attention due to the intensifica-

tion of climate change, and international investors and industry chains are increasingly focusing on ESG issues. Climate change affects everyone's life, and it is also crucial for students to have a better future. As a result, governments, schools, communities and a wide range of organizations are developing programs and practices [2].

The UK Higher Education Survey [3] identified sustainability as the biggest challenge for higher education in the 21st century. Domestic and international higher education institutions have begun to incorporate sustainability indicators into the scope of school governance, such as Oxford University's commitment to reduce carbon emissions across the university by 2030, Harvard University's commitment to reduce carbon emissions in the United States, and Carbon Negative and sustainability programs have also been included in the USR as items to be promoted by universities in the United States. The UK Higher Education Survey (Quacquarelli Symonds, QS) has identified a number of areas for improvement within higher education institutions, focusing on how to promote sustainability in higher education [3].

Higher education is the bootcamp for nurturing talents in a nation, and as the country moves towards net-zero emissions by 2050. It is imperative for universities to play a key role in nurturing green leaders for sustainable development. Changes in the industrial and social environments are rapidly impacting the mode of teaching and learning. Teachers need to guide students in solving problems encountered in the real world through the design of curricula and instruction, and cultivate the ability of systematic thinking and cooperation in problem solving

[4].

Professionals from various fields can contribute to the work of sustainable development, and it can also be found that it is a challenge for the departments with the division of labor of professional fields to cultivate the green collar talents for the development of the country and the transformation of the enterprises. If students do not enroll in related courses during their study, they will need to attend workshop courses for Sustainability Manager and Carbon Emission Manager outside school with tuition fee per hour higher than $NTD1,000-1,500$, which is considered very high for most university students [5].

Therefore, this paper aims to analyze the learning outcomes of the students by designing a 6-hour workshop on "ESG Sustainability Report" through a project-based learning (PBL) approach using the Notion digital note-taking platform for co-editing.

II. LITERATURE REVIEW

A. Climate change and Net Zero

As greenhouse gases are causing surface warming and extreme climate phenomena are frequently spreading. The United Nations has called for carbon reduction actions to be taken without delay, and "Net Zero Carbon Reduction" is a common issue around the world. According to Net Zero Tracker, a website tracking the global net zero emissions trend, as of mid-December 2023, 151 out of the world's 198 countries have already declared that they will reach the goal of net zero greenhouse gases in 2050, and the number of regions, cities, and corporations joining in the declaration continues to increase (e.g., Fig. 1).
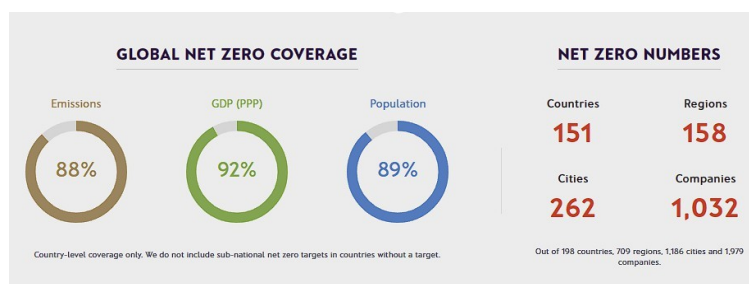

Fig. 1. Global net zero emissions trend resource: https://zerotracker.net/ "Jan 18th 2024"

Apple even announced on July 21, 2020, that the company plans to be fully carbon-neutral (carbon neutral, also known as net-zero carbon) by 2030, 10 years earlier than the United Nations Organization's "Intergovernmental Panel on Climate Change" (IPCC) plan. That commitment not only includes all of Apple's business, but also incorporates Apple's supply chain and product lifecycle, which means that by 2030, every device sold by Apple

will have no impact on global climate [6]. In addition to Apple, Amazon, the world's largest e-commerce company and cloud-based service provider, which is closely related to the department's specialty, also has a net-zero carbon plan, declaring that it will achieve net-zero carbon by 2040.

In terms of sustainable development goals, climate is a key factor in the sustainability of our planet. In recent

years, world leaders have held several summits on climate. In 2021, the European Union passed an interim climate law, and Ursula von der Leyen, President of the EU Executive Board, pointed out that "the political commitment to become the first climate-neutral continent in 2050 has now become a legal commitment, and the climate law is paving a green path for the next generation of the European Union. On Earth Day 2021, US President Joe Biden convened national leaders from 40 countries for a two-day online climate summit, pledging to reduce carbon emissions by 52% by 2030. The UK also announced a 78% carbon reduction by 2035, demonstrating the importance that global leaders place on climate action targets for sustainable development [7].

On April 22, 2021, World Earth Day, Taiwan declared that "2050 Net Zero Emission" is a common goal for the whole world, and it is also Taiwan's goal. The National Development Commission (NDC) announced the "Taiwan 2050 Emission Pathway" in March 2022 to guide enterprises to implement net-zero transformation. In line with the national policy, the Financial Supervisory Commission (FSC) promotes the "Sustainable Development Roadmap for Listed Countertop Companies" to disclose the greenhouse gas inventory and confirm the information in phases, with all listed company completing the greenhouse gas inventory in 2027 and all l listed company completing the verification of the greenhouse gas inventory in 2029 [8].

B. Project-based Learning, PBL

Project-based Learning (PBL) refers to the learning process that encourages learners to think creatively and correctly, to develop their thinking skills through the exploration of a specific topic, to solve the problem or to complete the project, in order to "learn how to learn" [9]; [10]. The instruction model consists of four stages, namely, "Topic Orientation", "Topic Construction", "Topic Development" and "Topic Presentation". The aim of PBL is to guide learners to face the real-world work environment, to learn problem-solving skills through existing familiar experiences, and to seek the knowledge they need from relevant information and human resources.

The purpose of PBL is to guide students to actively participate in a certain topic or issue, which is a kind of student-centered and creative learning, rather than the traditional expectation of teachers to give standard answers to questions. The approach is to combine the learning activities with specific, practical topics and issues in life. Using independent learning by students and teachers to provide counseling through the discovery of problems,

process design, strategy development, investigation and research. As well as the development and development of strategies and strategies for the development of new and innovative learning strategies. Through problem identification, process design, strategy development, research, and problem solving, students can complete their projects and achieve the results of practical learning [11].

The function of PBL in professional development is to guide teachers to transform from knowledge receivers to active knowledge explorers. Focusing on topics that are of interest to learners and related to teaching and learning, and controversial issues for cognitive, skill, and affective learning. As well as in-depth exploration of the key connotations of the problem, cognitive thinking, postulated cognition, and questioning skills, in order to achieve a high level of learning for problem solving [12].

PBL originates from the learning by doing approach proposed by Dewey, and uses activities, projects and problem solving as the main axes of learning [13]. Dewey viewed the curriculum from a broad perspective, and in addition to refining experiences into academic learning, he also emphasized non-academic learning outside the academic disciplines, and the need to expand from school activities to out-of-school activities in order to obtain rich experiences [13].

Many researchers have found that PBL can develop and promote students' complex problem solving skills, information search and processing skills, collaboration skills, and project management skills. A successful project-oriented learning can connect teachers and students in pursuit of a common goal, so that students can get better and deeper learning [14] found that there are two important success factors in the use of PBL: one is a well-planned course design that fits the project implementation and content, and the other is the difficulty of the project problems and the control of the course time.

C. ORID Focused Conversation

Learning by doing requires putting more autonomy in the hands of students and using good conversations to guide their participation. One of the many ways to promote better conversations is through the Focused Discussion Method developed by The Institute of Cultural Affairs (ICA) as part of the Technology of Participation (ToP). ToP consists of four levels of questions as follows [15]:

O-The Objective Level: Questions at this level belong to the factual and external reality.
R-The Reflective Level: Questions at this level evoke immediate reactions and internal responses, feelings, or associations of the individual to objective information.

I-The Interpretive Level: Questions at this level look for meaning, value significance, and implications. Digging deeper, looking for insights, patterns of learning.

D-The Decisional Level: Questions at this level elicit "so what? response, allowing people to identify implicit implications, want to find out what the resolution is, and what the next steps are.

III.   MATERIALS AND METHOD

The 6-hour ESG Sustainability Reporting Workshop was attended by 34 students from the College of Engineering of National Cheng Kung University (NCKU), who came from different industries, including 7 from the technology industry, 5 from the semiconductor industry, 6 from the manufacturing industry, 3 from the construction industry, and 10 from other industries.

Among them, 4 (12%) have had experience in sustainability related courses, one of them is working in an accounting firm, including GRI, TCFD, SASB, IFRS S1 S2, ISO 14064, ISO 14067, ISO 50001, another two have completed the 80 hours of corporate sustainability manager certificate, and another one is attending the corporate sustainability manager course. One is currently attending the Corporate Sustainability Manager program, and 30 (88%) have not known sustainability reports at all.

IV.   RESULTS AND DISCUSSION

At the end of this workshop, the ORID feedback form was used to allow students to review their learning process. Focused Discussion Method, starting with O, which is divided into two parts: the lecturer and students, followed by R, which are also divided into two parts: the lecturer and students; the third is I, and finally D, which is the action that the course can trigger in the students.

Overall, in addition to the knowledge and skills gained from the 6-hour workshop, the most important feedback from the students was: "Seeing the current situation of the Marshall Islands makes me think of the islands in the sea, including Taiwan, and if we don't pay attention to the impacts of climate change, then today's tragedy of the Marshall Islands will be the future of tomorrow's Taiwan or other countries.

A.   The Objective Level

1)   Seen or heard from teacher :

Lecturers consider students' prior knowledge
The instructor anticipates that those who are new to the Sustainability Reporting Standards GRI 2021 will be at a loss as to how to apply the standards, so she underline this part more.

·The instructor provided a basic framework for a sustainability report and what information must be disclosed in a sustainability report.

Interactive teaching
·The lecturer's presentation was very lively and did not make me feel sleepy. Timely interaction with the students on the stage to increase concentration and participation.
·The interactive teaching method allows me to understand the production of sustainability report more quickly than just a written explanation.

Resonance ·The video in the workshop about sea level rise and the disappearance of homes in other countries is very touching.
·There are no division in professions or specialties for sustainable managers. The teacher's perseverance in learning and obtaining professional certificates, education and training on GRI standards, SASB and TCFD standards.
·Previously, I only knew that there was the position of "sustainability manager", but from teacher's introduction, I realized that there are so many standards and criteria to rely on.

Utilizing the Notion online co-editing platform ·I was impressed by the way the teacher used Notion to teach and guide me. Learned different ways to read the sustainability report.
·The convenience of using Notion as a co-editing platform.
·The use of Notion as a collaboration platform. 4.1.2 See or hear from classmates

Task division
·Organizational structure is complete, creativity is unlimited, experts are in the community. Different perspectives from different backgrounds. The Power of Teamwork
·Good division of work in the group to complete in a short period of time.
· Students in the same group cooperated with each other and distributed the work in the report. Each group's sustainability report was complete and each student utilized his or her own strengths.

Fun & Creative
·Interest in the content of sustainability reports for companies is much higher than learning how to write them.
· When we started to set up our own company, there was a lot of discussion among the students and everyone started to have some interesting ideas.
·Each group's creative ideas for a sustainability report.
·Teamwork, be creative and learn new techniques with humor and innovation. Creativity of students. Collaboration of students.

B.   R-The Reflective Level

1)   The reflective level: teacher's part: Students said: For students, this class is very meaningful and rewarding. Student's feedback as follows:

Teacher taught through Notion platform

·I was impressed by how well the instructor interacted with us in the classroom through the use of the Notion platform.

·I was most impressed by the teacher's use of Notion to lead each group to do a sustainability report. In the process of practice and discussion, we could enter the mood more quickly and learn the guidelines and master the key points of the sustainability report effectively.

·Notion co-editing is the most memorable part.

Teacher's lively teaching style

·The lecturer was not rigid about the basic framework of the sustainability report, and through many interactive ways, I was able to have an outline of the basic framework and know where to find the related resources I needed in just one day.

·Within a short period of time, students were guided to understand the intent of the sustainability report and the general framework, and could feel the instructor's professionalism in this field and the degree of dedication in preparing the lessons.

Teacher's logical and easy-to-understand instruction method

·The instructor introduced the GRI Sustainability Reporting Framework in an easy to understand way, which is very helpful for those who want to enter the field of sustainability management or have a better understanding of this field.

·Few teachers like Dr. Hsu taught so thoroughly from the report structure to the use the verification, climate change regulations, how to check and use those tools, almost hand in hand to teach consultants the secrets of the industry.

Teacher increased student's motivation about sustainable development

·I start to get interested in this lesson and I will gradually come to know more about this topic and even attend courses on my own.

·Becoming a sustainability manager is not difficult, it is mainly a matter of enthusiasm and dedication.

·The lecturer's way of starting from the easy to the deep is very good, and with interactive explanations, it is more interesting than just lecturing the course.

2)   The reflective level: classmates' part:

Students work together to finish it quickly

·After the instructor's survey, I realized that many people had not come across the sustainability report in their work, but in the final report, I could feel that everyone's understanding of the sustainability report had been improved.

·Through interaction with students, not only do we have a deeper impression of the standards and guidelines to be used, but we also support each other with mutual professional support, which is considered very good cooperating and learning practice.

Students are serious and work as a team

·They participated actively in the teamwork, and did not try to muddle through. I felt that it was good to have a team because everyone was utilizing their strengths and completing the posting of the documents and maps as soon as possible!

·Each student understood the sustainability report very well within a short period of time and was able to follow the teacher's requirements to achieve the key points in the sustainability report. It was like a team, helping each other.

C.   The Interpretive Level

The sharing of key knowledge and skills was the most valuable part of the workshop.

Collaboration

·The collaboration of the students will stimulate their imagination and spontaneity to make the difficult task of writing a sustainability report a little more interesting.

·I always thought it would take a lot of time to explain the GRI Guidelines, but the instructor was able to do it in a very short period of time, and at the same time used more than one company's report to illustrate the Guidelines.

·Unexperienced and new way of teaching, learning to write a sustainability report using the co-editing method.

D.   The Decisional Level

Opening the Door to the Sustainability Profession

·This workshop has opened the door to the field of sustainable development and given me an in-depth understanding of the importance of sustainability reports and the process of writing them.

·It doesn't matter if you don't know sustainability standards, you can start to reduce carbon emissions in your personal life.

·The workshop not only helped me understand the complexity of sustainability, but also motivated me to actively practice sustainability in the future.

Take Action

·After attending this workshop and taking the sustainability course, I will really start to care about the environment around me.

·"Sustainability" is more than just words and promises,

we really have to put them into action.

·Looking back at the day's learning, I realize that sustainability is not only a concept, but also a practice. I have decided to apply what I have learned in my personal and professional life by setting up a clear action plan

Acquiring related professional licenses

·If I have the opportunity, I will take a course on sustainability or obtain a license.

·It increases my interest in participating more sustainable activities and related licensing courses.

·If there is a deeper need for this skill in my job in the future, I would also consider applying for a sustainability manager's license.

·I plan to incorporate sustainable into my career planning, and I expect to enroll in NCKU corporate sustainability management course next year to progressively enter the sustainability industry.

·I'm very excited to take the Corporate Sustainability Manager License training course. In the next course, I would like to start with "ISO14064-1 Greenhouse Gas Inventory Officer Certifier" and work on my sustainability career step by step.

More engagement in sustainable development

·As there will be ESG related recruitment within the company in the future, I will take the initiative to ask for the opportunity to participate and join the discussion.

·In the future, we will apply the teacher's teaching method in the courses organized by our partner organizations, with the goal of making the students interested in sustainability reports and acquiring the basic skills of report writing.

·In the future, we can use the Internet to find companies that have already published their sustainability reports and refer to the content structure of the reports, so that if the our company have the need, we can have the opportunity to present our understanding of the sustainability report structure or participate in the practical work.

V.   CONCLUSIONS

From the four levels of ORID's student feedback, we can see that effective learning requires prior preparation and planning by the teacher, as well as appropriate guidance and interaction during the course, in order for students to have abundant learning results. Students will be guided through targeted project-based learning, and each group will utilize teamwork and creativity to complete their own sustainability report, which will then lead them to the next step in the process.

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