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Mitigating SDGs fatigue: Empowering students with ChatGPT for effective SDGs learning and implementation

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Abstract

SDGs is a global goal for humanity, and since 2017 it has been promoted and implemented in various ways in different countries and in different ways. Although SDGs are being promoted worldwide, the problem of fatigue of SDGs is emerging gradually. The same problem of Fatigue of SDGs may also be faced in Taiwan when promoting SDGs - in schools, such burnout may occur in teachers. To this end, we introduced the Chat GPT as an adjunct to our study. Teaching teachers were given the opportunity to increase their motivation to prepare by integrating themselves into the design of the SDGs and the practical experience of interacting with the Chat GPT. Based on the literature analysis, we found that most of the studies on the use of Chat GPT were conducted from a quantitative perspective, and there were fewer qualitative studies. Therefore, we will conduct a qualitative research and observation of a class of mainly master's degree students: 14 students gave informed consent to write lesson plans related to SDGs through interaction with Chat GPT. During the process, the researcher will ask the participating students on a weekly basis to give feedback on the difficulties they encountered in using the program and how they overcame them. They will also be asked to give feedback on how they have been helped or what strengths they feel they have learned from the process.

Keywords: fatigue of SDGs, generation AI, Chat GPT, empowering, qualitative research about SDGs

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1. Introduction

We are living in a world where the relationships between different countries have an impact on each other. Against this environmental backdrop, the United Nations Sustainable Development Goals (hereafter SDGs) are seen as a key guideline for advancing the common prosperity of humankind and protecting the planet. This program is inherited from the MDGs and has been proposed since 2016 and promoted since 2017. Over the past period, through research and practice by different countries based on their own domestic characteristics, we seem to be moving towards a possibility of a better future for the world together. However, a few years have passed and we are beginning to face a common and emerging phenomenon: the Fatigue of SDGs. Fatigue of SDGs is a concern for what we want to achieve by 2030: although the discussion is not yet enough. In Japan, for example, a survey in March 2023 found that around 60% of respondents reported feeling tired by the SDGs (although around 80% of consumers would like to see companies be more proactive in communicating about them). (Takamasa, 2023)

In the face of such a situation, Taiwan may also face the problem of fatigue of SDGs when it promoting - in schools, this kind of fatigue may appear in teachers because teachers need to teach the same content repeatedly and prepare for the same issues, so tired feeling of specific issues may appear earlier or faster than students. To this end, we will operate the Chat GPT in our study as an adjunct to our work, to be practiced on people who are required to teach or who will become teachers. The practical experience of integrating themselves into the design of SDGs and interacting with Chat GPT will allow teachers to increase their motivation to prepare or at least not to burn out on SDGs.

2. Literature Review

The generation of this study is firstly related to the situation of fatigue of 'SDGs'. As mentioned above, there has been research and discussion on fatigue of SDGs in Japan in early 2023. This kind of discussion is not only in Japan, but also in European and American countries where research has been conducted on this topic. (Huang, 2023) For example, El-Jardali's team (2018), in their study of government-university partnerships to promote SDGs, noted that the disconnect between government, academic institutions, and other key players, both in terms of goals and means, presupposes the risk of burnout, and that this risk will ultimately translate into units starting over with their own independently-developed research approaches. Kusuma (2022) cites climate change as an example of a situation where consumers, as individuals, are trying to contribute to environmental change through their own efforts, but when they know large corporations engaging in seemingly wasteful behaviors in order to protect their own interests, the same feeling of powerlessness can lead to the fatigue of SDGs.

As for the research and discussion of generative AI, regarding the relationship between generative AI and education, it has trending toward the belief that generative AI can be used as a supplementary tool for education when used appropriately by the end of 2023. Scholars have argued that the educational arena is appropriate for advancing research on SDGs, that generative AI is already a part of our lives, and that as a tool we should use the content of such a tool appropriately; so higher education should face rather than fight technological advances. (Berg & Plessis, 2023; Farrelly & Baker, 2023)

Villarreal's team (Villarreal, et. al., 2023) believe that Chat GPT is a valuable adjunct for those involved in education because of the ability to build programs for specific courses and provide customized learning resources and activities. Berg and Plessis (2023) mention that generative AI such as Chat GPT can contribute to teaching teachers in terms of curriculum planning, critical thinking, and educational openness. These tools can

help teachers improve the quality of schooling. Berg and Plessis show us that when a teacher-preparer is unsure of his fit or understanding of a teaching career, he can get the information he needs by interacting with Chat GPT, which will saves him time, but he needs to critically evaluate the accuracy of the material he receives. However, they also noted that Chat GPT cannot provide contextually relevant or diverse cultural information (e.g., localized messages), so teachers are responsible for selecting materials and content that are appropriate for a particular cultural context (e.g., their own teaching context).

Despite the positive attitude adopted by academics, the effectiveness of generative AI as a supplementary tool in academic work is nonetheless questionable. Spennemann (2023) conducted a study on using Chat GPT as a generative tool for writing essays. He used the paid version of Chat GPT 4, which is currently considered to be the highest level of generative AI. The goal was to write a 1,500-word academic paper, but the results were disappointing: there was no depth of content, and not able to generate a longer paper. Spennemann believes that the final results were only at the level of a junior high school, which suggests that there is still a llong way for generative AI to improve.

Regarding the issue of GAI versions, Lozić and Štular (2023) conducted a comparison of six generative AIs currently available, including Chat GPT 3.5, Chat GPT 4.0 (subject to fees), Bard, Bing, Aria, and Claude 2. They concluded that all GAIs are fluent but not factual, and their comparison was made by writing historical research on the same specialized topic with six GAIs and comparing the final results. They noted that GAI was prone to citing English language materials and more easily searchable literature as sources. In comparison Chat GPT 4.0 (based on the payment factor) was the most accurate, Chat GPT 3.5 was worst than 4.0, Aria and Claude 2 which performed very poorly. Based on their findings, we will use Chat GPT 3.5 in our research process, especially since our research is not about discussing specialized subjects, but rather about using this type of tool as an aid in lesson plan design. In addition to the above reasons, the reasons for choosing only Chat GPT 3.5 for our study include the relative familiarity of the students tested, ease of use, and that is for free, so we will not be discussing all of the generative AI tools.

3. Curriculum and research planning and implementation

The actual venue was a master's course at Fu Jen Catholic University, which focused on the concepts of globalization and the SDGs. The program consisted of 14 members, all of whom were adults: five men and nine women. only two of the 14 were graduate students who were not working part-time, while the other 12 were working on campus. Of the 12 teachers working in schools, 11 were in elementary school and one in a nursery school. We ranked them R1-R14 according to the order of school selection. We did not consider age in this study because a) Chat GPT is an emerging tool and Chat GPT 3.5 will not be available until November 2022, and b) the students in this study are already accustomed to using the Internet for teaching and learning on a regular basis. 14 students are listed in Table 1 below for their gender, grade level, and unit of teaching.

Table 1

Table of basic information of the participating students

Number	Gender	Master's Degree Programme	Teaching Unit
R1	Female	2	Kindergarten
R2	Female	1	elementary school
R3	Male	2	postgraduates
R4	Male	2	elementary school
R5	Female	1	elementary school
R6	Female	1	elementary school
R7	Male	1	elementary school
R8	Male	1	elementary school
R9	Female	1	elementary school
R10	Female	1	elementary school

Table 1 … continued

R11	Female	1	elementary school
R12	Male	1	elementary school
R13	Male	1	elementary school
R14	Female	1	postgraduates

All student participants gave informed consent prior to the study, knowing that they were participating in the lesson plan writing process through Chat GPT and that their feedback would be used by the researcher in a de-identified manner within the research findings. This article has also been placed on the course teaching website at the end of 2023 prior to publication for review by students participating in the course.

Given the time constraints of the study, the research was conducted in two ways: firstly, students were asked to attempt to write a lesson plan via Chat GPT 3.5 that linked to the SDGs topic. This was because the class consisted mainly of elementary school teachers, and it was hoped that this opportunity would allow the students to create lesson plans that could be implemented in their teaching units in the future. Secondly, we hoped to understand through qualitative research what problems students encountered or how they felt about using Chat GPT to write lesson plans. We organised weekly work schedules for students and asked them to write reflective assignments after completing the assigned tasks, so that we could observe week by week the problems faced by students and how they dealt with these problems.

The above two works were carried out over a period of five consecutive weeks, starting with the October 2023 programme, and our aim was to try to understand the problems or difficulties encountered by our students in the writing process.

4. Test questions and student feedback

For five consecutive weeks between October and November 2023, 14 study participants were asked by the researcher to design a 40-minute lesson plan based on the SDGs objectives. The test questions and responses for the five consecutive weeks are listed below:

4.1 Week 1:

Students are required to design a lesson plan topic and outline by using Chat GPT and complete a 500-word description of the lesson plan. In order to confirm that the students actually used Chat GPT to generate the content of their assignments, we asked them to attach screenshots to prove it. We asked students to record any difficulties they encountered during the process and how they overcame them. The following is an example of the responses from the first week's assignments of the two study participants:

- R6: In the process of using Chat GPT to create lesson plans and outlines, I found that it was easier to get appropriate responses to questions in English. However, I think the key is whether the questions are typed in a way that is easier for the AI to understand. It is possible that the answers are too broad and you need to narrow them down for more in-depth questions. You also need to pay attention to whether the English terminology is correct and more in line with English speakers' usage.

- R14: Insufficient tolerance for specific groups, even if it is clearly stipulated that the target of the lesson plan is primary school students, most of the teaching objectives given by ChatGPT are from the perspective of adults, and there is no practical advice for primary school students in terms of their actual learning situation and existing level of understanding. ..... At the same time, most of the objectives and programmes given by ChatGPT are theoretical, and there are fewer contents integrated with practice, which makes the feasibility of the programme relatively low.

4.2 Week 2:

The content of the lesson plan designed in the previous week will be further developed, including the setting of a clear target audience, planning of the teaching objectives, the focus of the lesson plan, the teaching resources, the content of the lesson activities (with time allocation), and the assessment methods. This week we asked students: Did the same problem occur when operating Chat GPT as the week before? Is the problem avoidable? Or how to avoid it? The following are the responses from three subjects:

- R8: This time I used ChatGPT to give assessment methods, although the content is very good and suitable for practice in the teaching field, but the scoring of each assessment method is not a percentage rate, but seven assessment methods, each accounting for 5 to 15 points, and the total score is only 70 points. This problem could have been avoided if only I had set up the multiple assessments and set the percentage of marks to be allocated. Even though it could not be avoided at the beginning, with my past experience, I could immediately find out that something was wrong and fix the lesson plan right away.

- R10: This use overall I think it is much faster than last time, may be I give Chat GPT my lesson plan directly, so that Chat GPT has a clear direction and smaller error, it will not have too big questions and produce out-of-focus answers, so more specific questions and simple questions for Chat GPT to deal with will indeed be faster.

- R12: We should check the generated content, not just trusting ChatGPT, but also the ability to make subsequent edits and revisions to the generated content to ensure the quality and accuracy of the content. When dealing with complex queries, it is best to pair this with the knowledge of a domain expert to ensure that the correct information is provided.

4.3 Week 3

This week we asked students to use Char GPT to find 5 children's books of similar age to the target audience of the lesson plan, and using Chat GPT to search for two video URLs. Students were asked to revert to using the internet to make sure that the books and videos were real. However, every student thought that Chat GPT's outputs for books and films were un-existent , with the exception of R12: R12 may have misinterpreted the question and therefore did not give a result corresponding to the question. One of R4's reviews had a strong sentiment: "Lies! Full of lies! GPT full of lies!" R4 concluded his report by telling the researcher, "I'm sorry I had to provide such a bad assignment to the teacher." R10 gave a positive observation: "When searching for videos, maybe it is because of the keywords, youtube videos and the video names provided by Chat GPT are not exactly the same, but they are already highly similar and the content can be used, so I wonder if it is because Chat GPT has converted the content that I asked for into a wider range of keywords, so that it would be easier to search for my desired content when searching on youtube. “ We found that under the Chinese interface, Chat GPT can only find un-existent books and video contents with higher accuracy rate.

4.4 Week 4

Completion of the required presentation content through Char GPT. Although Chat GPT 3.5 cannot directly produce the content of a PowerPoint presentation, it is possible to request an outline, title and content that meets the needs of the individual. Two students' reflections are presented below for illustration:

- R1: I realise that no matter how far Artificial Intelligence (AI) develops, it is not equivalent to human intelligence. Human beings have the ability to adapt to various situations and make changes according to different occasions and ages. But it saves me more time if I look at the information before searching and checking if the book provided by Chat gpt exists.

- R13: Chat gpt's order for each page of the PPT outline didn't seem very logical, so instead of using the order he provided, I selected the pages I felt were usable and rearranged them for the presentation.

4.5 Week 5

In the last week, we asked students to compile all the Chat GPT data from the previous four weeks into one completed lesson plan. In order to help students reflect on the lesson plans, we provided two lesson plans written by Taiwanese educators for comparison, and designed two questions for reference:

Q1. Compared with the two lesson plans, what do you think are the strengths of your lesson plan? What can be improved?

Q2. Please summarise the process of using Chat GPT to produce your lesson plans over the past five weeks.

Students' responses are as follows:

- R3: In conclusion, Chat GPT is still a good tool to use, but with the current development, we may need to use English to ask questions or through some time of building and cultivation, so that Chat GPT can answer the questions closer to our expected answers.

- R7: In fact, I did not know Chat GPT before I did this assignment, and I even rejected Chat GPT because of the negative news I read. I thank my teacher for giving us the opportunity to use Chat GPT to write assignments, so that I can understand and accept the existence of AI. In the process of using Chat GPT to write lesson plans, I learnt that even though Chat GPT is a huge database, it still has its limitations, it is not omnipotent, sometimes it may even make mistakes, and I was ridiculed by its omnipotence, especially since the Chinese database of Chat GPT still has a lot of room for improvement so far. At present, what AI can do is to play the role of an assistant and provide suggestions, but not all the information is correct, and it is absolutely necessary to seek verification from multiple sources.

- R11: I found that the answers given by Chat GPT were only directional (but there is a possibility that my instructions were not clear enough), after reading the specified information, a complete lesson plan should have specific content, such as the content of the teaching content to convey intellectual concepts, it should have a complete list of words in the lesson plan, which is obviously not the case in the lesson plan produced by Chat GPT. Another scenario is that the teaching resources (ex: illustrated books) provided in the lesson plans are wrong. If we wanted to use ChatGPT to help us write the lesson plans in order to save our time to complete the lesson plans, then is this situation not a bad idea at the beginning (we need to spend extra time to find out the mistakes), and ChatGPT only gives the directional answers. If the lesson plan is to be more complete, the designer may need to spend more effort to think about how to make it more concrete. In conclusion, I think ChatGPT can only be used as a supplementary tool, and it is unlikely that it can replace the teacher's function (designing lesson plans).

4.6 Final Reflection

At the end of the semester, students were asked to consolidate their reports from the entire semester into one full report and to write about their thoughts on using Chat GPT to write their teaching plans during the semester-especially as we hoped that students would actually apply it to their teaching. In addition to the 2 graduate students who did not teach, 2 of the remaining 12 students did not use the lesson plans on campus (R6 and R12), one due to time constraints in the teaching program and one due to the fact that the lesson plans were designed with the expectation that they would be used to visit the actual site but could not be made available. We listed a few of the students' feedback and reflections below:

- R2: The students were very focused and engaged when the course was delivered in the classroom, and they also felt very involved.

- R7: On the day of the lesson, the school used the morning study hall to do a disaster prevention drill, which delayed the lesson time, and the actual lesson lasted only 30 minutes, so the lesson was almost rushed to finish, except that the students did not finish the sharing on the stage, and the transfer of knowledge was not as good as expected. However, it is worthwhile to note that, through the preview of the course, we realized that the students were very unfamiliar with international affairs, so we changed the focus of the course to a local perspective, so that the students would be able to recognize the threat of climate change to human beings and think about how to delay the occurrence of disasters.

- R8: This semester, I am very surprised that this course has allowed us to actually use Chat GPT to produce lesson plans and deeply understand the strengths and weaknesses of Chat GPT. Teachers must be more familiar with new technology tools than their students, and this lesson plan design is a good shocking education.

- R10: I had a few thoughts about how this lesson plan fits into the international education curriculum of the school I am serving. There were some strengths and weaknesses that I realized after teaching this lesson plan. The strength was that the students were able to get a better impression and idea of the curriculum through this lesson plan. The disadvantages were that it was difficult for the students to empathize with the program, it was easy to lose focus, and it was not sufficiently forward-thinking.

We noticed that the lesson plans produced by Chat GPT were indeed used by the students in their teaching field, and the practical application of the lesson plans resulted in the improvement of their teaching skills through teacher-student interactions, and their personal teaching experiences. Even the two students, who had no practical teaching experience, expressed their concerns through the process of using Chat GPT. In conclusion, Chat GPT or generative AI as a teaching aid is really feasible.

5. Results and Discussion

The aim of our study is to see if it is possible for teachers to save effort through the complementary use of generative AI if those who work as teachers may be tired with SDGs, as previously mentioned by Berg and Plessis (2023) in practice. In fact, we noticed a consistency in the students' reflections from week to week that Chat GPT was not as easy to use as one might think. From the very beginning of the instructions, students noted that the instructions had to be correct and free of ambiguity in order for Chat GPT to give the correct instructions. In addition, Chat GPT often gave incorrect results when instructions were given by Chinese. Particularly in terms of reference materials, students had various complaints during the third week of the study. Although the researcher made it clear in the instructions for the assignment that if the third search through Chat GPT did not yield the correct results, students could directly search for appropriate illustrated books.

The above situation is in line with the problems observed in research of Lozić's and Štular. (2023) They suggest that there are three biases in Chat GPT, namely linguistic bias, neo-colonial bias and citation bias. We will discuss the first point in particular, which concerns linguistic bias. They noticed that the English language data appears 92% of the time in the study. The problem is that generative AI should be designed to understand many different languages. They suggest that current search engines may be more sensitive to English-language publications. Their understanding was helpful to our study. In this study, students generally responded that search results were often unsatisfactory when using the Chinese language interface - whether the use of Chinese was based on Chinese input or the interface was translated directly into Chinese using Chrome's translation function. The researcher had conducted tests in Japanese and the results were similar to those in Chinese. In the aforementioned study, R13 was the only student who used English from the beginning of the assignment and he encountered fewer problems than his classmates. In his third assignment, he mentioned that "I can't ask him to find a book in Chinese directly, so I have to ask him to recommend English books and then see if there is a

Chinese translation, otherwise I may not be able to find one. This can be taken as a proof of linguistic bias.

At all, using Chat GPT to generate the required lesson plans is really feasible. Although the learning process can be fun for students, the Chinese language interface makes it more difficult for students to enter and operate, and the ability of Chat GPT to give different directions of thinking can be a real help to teachers who need to design lesson plans, because different aspects of thinking represent different teaching possibilities. With the right instructions, Chat GPT can save teachers time in preparation. However, this means that we need to let educators learn to use Chat GPT, both in terms of how to specify statements to get the content they need, and in terms of actually knowing what the limitations of Chat GPT are.

6. Conclusions and Recommendations

In this study, we note that focusing on how instructors use Chat GPT and how they feel about using it is a research topic that deserves further discussion. Through the results of the qualitative study, we found that when Chat GPT is used appropriately, generative AI can indeed be a complementary tool for teachers, and it can provide teachers with a sense of freshness and creativity through different ways of data collection. However, to be able to use Chat GPT or even generative AI, it is used to be require correctly training. In the literature, we find that many scholars have mentioned this point, but there is less discussion on how to do it. In addition, there is relatively little discussion on how the lesson plans produced by generative AI can be used in teaching. Based on the current findings, we suggest that more in-depth qualitative research on teachers could be conducted in the future: many existing studies have used quantitative analyses to conduct research on teachers and students, including users' attitudes, motivations, or feelings. These studies provide us with clear data to understand the actual state of teachers' and students' use of generative AI, and form the basis for further qualitative research. The purpose of qualitative research is to analyse or discuss the problems encountered by users in the process of using AI, so as to understand the differences between different users.

7. References

Berg, G. van den; Plessis, E. (2023) ChatGPT and Generative AI: Possibilities for Its Contribution to Lesson Planning, Critical Thinking and Openness in Teacher Education. *Education Science*. *13(10)*, 998; from: https://doi.org/10.3390/educsci13100998.

El-Jardali, F; Ataya, N.; Fadlallah, R. (2018). Changing roles of universities in the era of SDGs: rising up to the global challenge through institutionalising partnerships with governments and communities. *Health Research Policy and Systems, 16*. From: https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-018-0318-9.

Farrelly, T; Baker, N. (2023). Generative Artificial Intelligence: Implications and Considerations for Higher Education Practice. *Education Science, 13(11)*, 1109; from: https://doi.org/10.3390/educsci13111109.

Huang, D. Y. (2023). Research and Discussion on the Integration of SDGs into the Core Curriculum. *Teachers' Workshop on Philosophy of Life at the Center for Holistic Education for the 112th Academic Year. Fu Jen Catholic University*, 2023.8.31.

Ikeda, Takamasa (2023). "SDG fatigue" spreads to all generations, attitude survey reveals. *Alterna*. From: https://www.alterna.co.jp/74067/.

Kuzuma, N. (2022). The Fatigue of Personal Responsibility in Fighting Climate Change Within this past week alone. *Green Network*, from: https://greennetwork.asia/featured/the-fatigue-of-personal-responsibility-in-fighting-climate-change/.

Lozić, E. and Štular, B. (2023) Fluent but Not Factual: A Comparative Analysis of ChatGPT and Other AI Chatbots' Proficiency and Originality in Scientific Writing for Humanities. *Future Internet, 15(10)*, 336, from: https://doi.org/10.3390/fi15100336.

Spennemann, D. H. R. (2023) ChatGPT and the Generation of Digitally Born "Knowledge": How Does a Generative AI Language Model Interpret Cultural Heritage Values? *Knowledge, 3(3)*, 480-512; from: https://doi.org/10.3390/knowledge3030032.

Perera, P.; Lankathilaka, M. (2023) AI in Higher Education: A Literature Review of ChatGPT and Guidelines for Responsible Implementation. International Journal of Research and Innovation, *Social Science, 7(5)*, 306-314,from: DOI: 10.47772/IJRISS.2023.7623.

Villarreal, R. M.; Perdomo, E. V.; Salinas-Navarro, D. E.; Aguilera, R. T.; Gerardou, F. S. (2023) Challenges and Opportunities of Generative AI for Higher Education as Explained by ChatGPT. *Education Science, 13(9)*, 856; fom: https://doi.org/10.3390/educsci13090856