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Practice for Incorporating into the Australian Higher
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Sustainability and Green IT Education: Practice for Incorporating in the Australian Higher Education Curriculum

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Abstract: Due to the rapid increase in the use of Information and Communications Technology (ICT) by individuals and organizations around the world, ICT has become a significant instrument for searching, conducting research, communication, entertainment, and commerce and information, just to name a few activities. However, the recycling of ICT end-products is becoming a major dilemma for individuals and organizations. This is not simply a matter of being concerned about environmental damage or providing a solution to an environmental problem; it is a problem that should concern all of us. Indeed, a contemporary society should tackle and address such a problem and address it as a matter of urgency for the sake of the current and future stakeholders around the world. Stakeholders at all levels, including universities, must contribute to the transition towards a sustainable world. Universities play a major role in transforming societies' and students' critical philosophies and world views through their higher education and research. Universities need to raise the students' awareness, especially in relation to their moral responsibility to contribute to sustainable development, and guide them to a better, sustainable future. This study discusses the development and delivery of a new Master unit dealing with the significance of sustainability and Green IT. This study provides empirical evidence based on quantitative and qualitative data from formal and informal feedback and reflections about the unit in general from 36 students. The students' comments reflect their satisfaction with the unit's overall constructs and assessments. The comprehensive outcomes confirm that students have become aware of what sustainable development is and how Green ICT should contribute to tackle this problem.

Keywords: Sustainability, Green IT, Higher Education Curriculum, Australia

Introduction

Technology usage – ranging from small to large devices – has become necessary and often essential for the operations of various public and private sectors, including governments, health, education, organizations, and others. The use of technology in these sectors usually enhances business performance by increasing efficiency and effectiveness. However, the adoption of this technology by businesses and individuals can often present a huge challenge and difficulty as these devices consume many natural resources, including raw materials and power; moreover, there is the problem of disposal and recycling, which presents an additional challenge to users locally and globally. To tackle this problem, the notion of sustainable computing was introduced to delay obsolescence and improve utilization, and most importantly, to reduce the amount of e-waste produced. To spread the awareness of sustainable computing among Information Systems Master students, a new postgraduate unit was developed, intended to modify current student attitudes since we consider our students to be future leaders. This study aims to examine and assess students' reactions to the Information Technology Seminar 65 (ITS65) postgraduate unit, and identify how the unit curriculum and assessments assist students to alter their attitudes to ICT usage locally and globally. Furthermore, this study aims to discuss the difficulties and possibilities encountered when offering a postgraduate unit dealing with sustainability and Green IT education. Moreover, the study examines and discusses students' feedback in relation to the ITS65 unit structure, assessment tasks, and teaching style, Wiki, and communication skills. This paper is organized as follows: Sustainability and Green IT in higher-education curriculum, Participants and Assessments, Research question and Methodology, Results – Students Reflections and Feedback, Discussion and Practical Significance, Limitation and Conclusion.

Sustainability and Green IT in Higher Education Curriculum

Following the global financial crisis in 2007, academics, researchers and universities began to seriously consider how to tackle these financial problems facing organizations of all sizes internationally and nationally. Organizations, and in particular, their IT departments, were hard-pressed to handle the pressure successfully. Therefore, to reduce the impact of this crisis on organizations and particularly their IT departments, universities started to introduce topics related to the concepts of sustainability and Green IT, to minimize the financial crisis and to introduce awareness of the ways in which ICT harms our planet, and to ensure that our students acquire the necessary knowledge of these concepts since the majority of the students confirmed that these concepts are new and not part of their vocabulary (Jucker 2002). The current literature (Axelsson, Sonesson, and Wickenberg 2008 ; Fien 2002) indicates that curricula which includes the issues of sustainability and Green IT focuses mainly on assessing and monitoring the footprint influence, and suggesting strategies for advancing economic sustainability. However, universities must develop and deliver units – similar to ITS65 – particularly to information systems students to make them aware of the harm that can be caused by ICT, and assist them to identify new strategies to support organizations to minimize the amount of current ICT usage, since these students will be the new IT leaders in the future. Therefore, it is necessary to include sustainability and Green IT principles and strategies in the higher-education curriculum, since it will encourage students' critical thinking regarding the opportunities and risks of using ICT in the current study as well in the workforce in the future. Furthermore, adopting and integrating these concepts in higher-education curriculum is essential, since these concepts will assist organizations and individuals to reduce the impact on our environment of the ICT footprint. It is hoped that ITS65 unit will assist students to develop into good stewards with a moral responsibility to protect and preserve the current resources for future generations.

ITS65 Unit, Assessments and Participants

This study was conducted using one post-graduate unit in an Australian university, namely Information Technology Seminar 65 (ITS65). The ITS65 unit was introduced as part of the Master's degree in the School of Information Systems. This unit was developed in the aftermath of the global financial crisis in 2007, since organizations and individuals were struggling to cope, especially the information technology/system area. The lecturers developed a proposal with the following objectives: 1) to provide students with an understanding of issues relevant to Organizational Sustainable Strategy; 2) to provide students with some understanding of issues relevant to Green IT. As for the learning outcomes, on successful completion of this unit, students: 1) demonstrate awareness of and sensitivity to the importance of sustainable development and business strategies at a time that is crucial for people and the planet in addition to profit, 2) display an understanding of the fundamentals of Green IT, 3) apply conceptual tools and frameworks to critically analyze and apply business decision-making practices and policies, 4) translate the theories, concepts and analytical techniques learned into practice. After these objectives and learning outcomes had been considered by the relevant administrators, the lecturers received the "good news" that ITS65 unit was accepted as part of the Master degree in the school of Information Systems, as well as an elective for other degrees in the business schools.

In general, the ITS65 unit aims to raise students' awareness of sustainability and Green IT and sustainability strategies proposed by recognized scholars in the field of strategy and sustainability (Rainey 2006; Teece 2009). This field is robust, uncertain and continuously changing; thus, we continue to seek further knowledge from scholars worldwide. The most important aspect of this unit is that it is a continuous journey of awareness of the latest research (Gomis, Parra, Hoffmann, and McNulty 2011; Harmon and Demirkan 2011; Hopps 2011;

Philipson 2011; Smith and Sharicz 2011; Wong and Goh 2012) coupled with the latest developments in the field, including the on-going attempts by academics, politicians and practitioners worldwide to educate our students about the impact of business on society and the environment. To achieve the unit objectives and outcomes, the unit assessments and syllabus are designed with mainly university graduate attributes in mind (see Table 1).

Table1: Assessment Activities for ITS65 unit (2009 – 2012)

<i>Unit</i>	<i>Unit Syllabus</i>	<i>Assessments</i>	<i>Date Due</i>
<i>ITS65</i>	<i>The ITS unit is mainly focused on issues relating to strategic development, IT business, sustainability tools and Green IT and other related issues</i>	<i>Three reflective Journals 30%</i>	<i>Weeks 4, 8, 12</i>
		<i>Individual Presentation of a IT Sustainable Strategy & Report Writing 55%</i>	<i>Presentation: Week 11 Report Writing: Week 13</i>
		<i>Wiki for Collaborative Writing 15%</i>	<i>Week 14</i>

Table 1 illustrates the ITS65 assessment tasks, and the marks allocated to each task. The three assessment tasks are designed to introduce the sustainability and Green IT concepts to our students, to raise the students' awareness of the damage that can be caused by individuals and organizations that use IT. Moreover, students are introduced to several strategies that will assist users to minimise or prevent the damage being done to our planet, and most importantly, to save some of the current raw materials for our next generation, also known as the seventh generation (Newton 2000, 2003).

The first assessment comprised three reflective journal entries; this assessment is designed to provide students with experience in critically, creatively and reflectively, reviewing and recording the main key points and their thoughts about material from textbook(s), journal articles and the Internet. Students use a template for the reflective journal; this template was designed by the university communication skills department and contains the following:

1) Reading (full citation required, including author, title, date, publication details, and page numbers). 2) What is the subject/theme of this article, 3) Argument/Findings (What is the author's argument?), 4) Evidence (How do this author's views compare with what others have said on the same or a similar topic?), 5) Observations (What are your own thoughts on the subject?), and 6) Conclusion. This assessment task encourages students to keep up to date with relevant readings and make regular visits to WWW sites, which are related to ITS65 unit. This assessment task was intended to identify students' reactions to the material provided in journals, textbooks...etc. Students will develop several communication skills by completing this assessment task, i.e.: critical thinking, writing, reading, technology, information skills and endnote software skills.

The second assessment task required students to deliver individual presentations of an IT sustainability strategy and a written report. Students were asked to select a company from their own country or from Australia in order to identify the ICT problems, and then develop a new strategy based on Teece and Porter models, (Porter and Kramer 2006, 2011; Teece 2009, 2010 ; Teece, Pisano, and Shuen 1997) which would assist their chosen organization to become more sustainable in their work practices, especially in the IT departments. These assessment tasks are designed to develop students' communication skills, i.e. writing, reading, oral presentation, critical thinking, technology and information skills. Students were required to individually present to the class their IT sustainable business strategy. Students were allocated only ten minutes to present, followed by five-minute questions from lecturers and classmates. Students were required to present their findings, which were the basis of their oral presentation, as a

written report. The report was expected to include: executive summary, introduction, body/background and IT strategic, recommendations, and conclusion. These assessment tasks were intended to develop and improve several communication skills: research, writing, reading, technology, information, critical thinking, and written presentation/oral skills and endnote software skills.

The third mode of assessment task involved the Wiki tool; this assessment was introduced in ITS65 to enhance the students’ social awareness and collaborative interaction, in addition to improving their writing, creativity, research skills and critical thinking. This tool was used for individual and group activities in the class whereby students shared their knowledge and skills in relation to the ITS65 unit. Using Wiki’s tool in ITS65 allow students to improve several communication skills, including writing, research, reading, critical thinking and, most importantly, technology skills.

The ITS65 unit comprised 36 participants from Australia, Asia (Including India), Middle East, South America and Africa (see Table 2). A mixture of different nationalities and cultures play an important role in the ITS65 unit, as each interaction and collaborative activity allow the students to learn to obtain new skills and obtain knowledge of the course material as well as other cultures via various modes of interaction from online to face-to-face. The group consisted of 25% female students and 75% male. The researchers noted that both genders took leading roles in numerous and various activities, including discussion, debates, presentation, teamwork activities, and exchange of ideas. The assessments average of female ranged between 75% – 85%, while male were between 80% to 60%. Table 2 provides demographic details about the ITS65 students for the 2009-2012 periods.

Table 2: Participants ITS65 (2009 – 2012)

<i>Students #</i>	<i>Gender</i>		<i>Australia</i>	<i>Asia (Including India)</i>	<i>Middle East</i>	<i>America (A) /North (N) and South (S)</i>	<i>Africa</i>
	<i>Female</i>	<i>Male</i>					
36	9	27	1	29	3	2 (SA)	1

Research Question and Methodology

The intention of this study was to examine and assess students’ reactions to the ITS65 postgraduate unit, and identify how the unit curriculum and assessments assist students to modify their attitudes to ICT usage locally and globally. To examine students’ reactions, a postgraduate unit was developed with the university and Master’s degree objectives and goals in the agenda. This study was intended to answer the following question: How can the unit curriculum and assessments for IS65 raise the students’ awareness of sustainability and Green IT? The methodology approach for this study is based on quantitative and qualitative data from 36 students who provided their feedback by both informal and formal means. The formal feedback gathered student opinions regarding the unit and the teaching methods; this feedback is anonymous and managed by the university. The quantitative items for the formal feedback focus mainly on learning outcomes, experience and resources, assessments, feedback workload, teaching style, motivation, effectiveness and overall student satisfaction. On the other hand, the ‘informal feedback’ is a teaching and learning initiative whereby; during the semester, students were asked to provide their anonymous feedback on the unit (course) using the model ‘Continue, Stop, Start’ (CSS). The CSS model gave students the opportunity to express their opinions, providing their comments regarding what they need continued, stopped or started by the lecturer. This action provided the lecturers and the students with the chance to reflect and think about the

benefits of the course, which assists in enhancing the process of teaching and learning. This empirical evidence will indicate whether the IS65 unit raised students' awareness of sustainability and Green IT, which are very relevant and current buzz words in the IT world, and whether it modified their attitudes.

Results – Students Reflections and Feedback

It was interesting to witness students' reactions to studying and completing the postgraduate ITS65 unit for the Master degree in the School of Information Systems. Students were stunned by the damages of information technology usage locally and globally and how this unit shifted their mindsets to enhance their knowledge of using IT wisely, since ITS65 imparted to them some IT strategies to assist organizations and individuals to minimize IT usage by adopting Green IT technology. Students were grateful that the lecturers, and ultimately, the university, introduced this unit since it raised their awareness of sustainability issues and gave them some knowledge and information about Green IT, strategies, risks and opportunities, and the threats and problems posed by IT in developed and developing countries. In this section, the researchers share their students' opinions and views regarding the ITS65 in terms of the content, assessments, teaching methods, Wiki use, communication skills and knowledge.

Students were very generous in their feedback regarding the **unit structure** and its introduction as part of their Master degree.

This is an indeed useful and valued unit, because Green information technology (Green IT) and sustainability is absolutely new to most of us, especially corporate social responsibility in actually significant in this situation (Student1).

I am a lucky student to join ITS65. Actually, I am appreciated with all the members of this unit; we learn and discuss together. I learned a lot from this unit, and I feel this unit is indeed practical because high technology is developing so fast at the moment (Student 2).

The lecture notes were well organized, and each lecture reflected the journal that we were working with, so it was easier for me to do the journal assignments after going through the lecture notes (Student 3).

This unit is really interesting and different from other units. I personally like the way how this unit teaches us to raise awareness regarding environment issue surrounding us and how becoming sustainable will help businesses and tackle the environment issue too (Student 4).

Reading this feedback encourage the first lecturer to provide cutting-edge knowledge to her students to inspire them to be part in the IT solution not the problem toward sustainability and Green IT. To confirm whether our students obtained the necessary communication skills required for this unit, several assessment methods were implemented during the semester to test their knowledge not memory, and these assessments were designed to encourage students to understand the current problems associated with IT usage and how students can be part to the solution. Students were pleased with the **assessments** as indicated by this feedback:

The unit and lecture really give me a lot of knowledge and information, which I feel I am more confidence in presenting my ideas in these IT relative areas, such as; I am getting to know much more about cloud computing, virtualization, and things all related to the sustainability and Green IT technology, also the presentation further brings my

speech close to formal and professional areas. It helps me to be more comfortable and confidence in presenting my ideas and structure them to present (Student 5).

The presentation was the best experience in this class. It was my first time to do a presentation about something I'm interested in, so I was enjoying it while I was doing the slides and searching about the powerful content as well as editing it after each feedback. This presentation was not only good for presenting to the class, but also was a very important start for the final report. I'm doing the final report with a complete idea behind each point. It was also a smart idea from the lecture to focus on the presentation, so now I can easily see the benefit behind it (Student 6).

[Working with ITS65] teaches me how to read, interpret and understand various materials such as journal and electronic articles from writing journals as part of the course work (Student 7).

The ITS65 lecturers' teaching philosophy is "learning to learn" This process is vital and dynamic, especially in higher education, as this it promotes better student learning (Beetham and Sharpe 2013; Sáenz-Royo and Salas-Fumás 2013). The application of this teaching theory is intended to make students more responsible for their own learning. By providing the appropriate tools and fostering a collaborative atmosphere, students are encouraged to participate and learn in the class in preparation for the real world; this will make them better able to make a significant difference when they are part of the work force in the future. It was noted that students' comments confirmed that they became more aware of, and learned a great deal about, sustainability and Green IT, including the related strategies. Also, our students' mind-sets started to change as a result of the unit's cutting-edge materials and the teaching style. Here are some encouraging comments from our students about the **teaching style** used for ITS65:

I personally enjoy and learnt a lot through this unit as it is actively involved student in the modern way where most people nowadays like to read, watch, listen, write and blog on the Internet rather than holding a class that only involving passive teaching where lecturer/tutor just passed down information, expecting a student to complete their work and ask questions themselves (Student 8).

Constantly sending mails, this is great. Keep it up, this way you're constantly in touch with students instead of only meeting up during class time. The idea of redesigning websites and getting people who are involved is a good idea. Because we get the first information on exactly what goes on before a website is hosted and ready for use (Student 9).

From the students' comments and feedback, it was confirmed that the style of teaching adopted for the ITS65 unit was interesting and challenging to both students and teachers, as it allowed the sharing of cutting-edge information and news in relation to sustainability and Green IT, and especially the damage that can be caused by ICT in the hands of individuals and organizations. To increase this type of interaction among our students, we adopted the Wiki tool in our teaching, and we graded this interaction. It was noticed that the majority of students found this tool motivating, exciting and interactive. Here are some interesting comments from our students regarding the interactive **Wiki tool** used in the unit:

Wiki is a good channel of communicating and sharing ideas; we can read many concise concepts and provides feedback for them, also to question the vague areas and open a discussion of interesting topic. There is news and interesting events happened in the world; it might not relate to our life, but it is good to know them through wiki, which

will help build our knowledge from this information, and giving us the wisdom when we apply those kinds of theories into the real life (Student 10).

Wiki discussion is helpful, at least there is an opportunity to share and see other people's perspectives. Agreeing and disagreeing at times, because of varied opinion, which is healthy and encourages the culture of reading (Student 11).

The use of wiki is another interesting and yet important tool in this unit. It changes the traditional way of teaching to active modern teaching. It enables the students to actively seeking updated information and shares it among other students so that students can exchange information and having discussion regarding the unit. It allows the student to think out of the box and generating new ideas (Student 12).

Our students' comments confirmed that by completing the ITS65 unit assessments and materials, their behaviour and attitudes toward ICT usage and the benefits of integrating sustainability and Green IT in ICT strategy, began to change. Moreover, students developed better communications skills (i.e.: writing, reading, critical thinking, debate, research and search, as well oral presentation) which will serve them well in their studies and future workplaces. Our students provided the following comments which confirmed that the ITS65 unit promoted and improved their **communications skills**.

This class was collaborative and interactive learning as we were made to discuss, organising, exchange the ideas and debate and argue our opinion on what others came up with the same or different topic. We were also made to contribute exchange and interact via wiki on same or different topic. All these interaction, reading and contribution helped to improve our analysing skills, writing skills and most importantly as we were made to present and argue out though and opinion about the topic, we gained the capability of presenting and facing the crowd (Student 13).

Additionally, this unit enhances my skill of ability to present my ideas professionally in front of the audience and also ability to write academically and professionally through available resources provided by [Our University]. Furthermore, it teaches me how to read, interpret and understand various materials such as journal and electronic articles from the previous two journals as part of the course work (Student 14).

It is a good practice and experience through working in the group, by sharing each other's ideas and also communicating well among the whole teamwork, discussion and illustration skills are highly appreciated as well when the different opinions appear, Team collaborations and interactions have to be aligned with each group member's contribution, and combining each member's ideas will help build an integrity structure of mind map and further development of working topics (Student 15).

The feedback (informal and formal) from our students confirmed the study aims and questions, since students confirmed and endorsed that their completion of the ITS65 unit encouraged them to reflect upon and take action to address the problems associated with technology usage (i.e. harming our environment and planet); moreover, this unit is intended to encourage them to work toward sustainable development in order to preserve resources for future generations. Furthermore, the most interesting aspect of completing this unit and the assessments is that it changes students' "mindset regarding sustainability and being environmental friendly. This unit is very important for future students to make the changes in the IT world" (Student 16).

Finally, Table 3 summarises students’ formal feedback in relation to: learning outcomes, experience as well resources, assessments, feedback workload, teaching style, motivation, effectiveness and overall satisfaction.

Table 3: Formal feedback results for period 2012- 2010 – ITS65

eVALUate quantitative items	Unit 2010	University Average 2010	Unit 2011	University Average 2011	Unit 2012	University Average 2012
The learning outcomes in this unit are clearly identified.	80	89	92	89	100	89
The learning experiences in this unit help me to achieve the learning outcomes.	90	85	92	85	100	86
The learning resources in this unit help me to achieve the learning outcomes.	90	85	92	85	100	85
The assessment tasks in this unit evaluate my achievement of the learning outcomes.	90	85	92	85	100	85
Feedback on my work in this unit helps me to achieve the learning outcomes.	90	79	92	78	100	80
The workload in this unit is appropriate to the achievement of the learning outcomes.	90	86	92	85	100	86
The quality of teaching in this unit helps me to achieve the learning outcomes.	90	84	92	84	100	84
I am motivated to achieve the learning outcomes in this unit.	100	85	92	84	100	86
I make best use of the learning experiences in this unit.	100	86	92	86	100	87
I think about how I can learn more effectively in this unit.	100	84	100	85	100	86
Overall, I am satisfied with this unit.	90	84	92	84	100	84

The response rates ranged from 68%, 72% and 59% for 2010, 2011 and 2012 respectively. It was noted that the majority of students confirmed that their completion of the ITS65 unit altered their attitude and motivated them to tackle down the problems and glitches associated with ICT adoption locally and globally.

Discussion and Practical Significance

This study aims to examine and investigate whether the completion of a postgraduate unit “ITS65” will change students’ mind-sets in relation to problems posed by ICT to our environment and planet. This study adopted several modes of assessment in order to raise students’ awareness of ICT problems, sustainability, Green IT, and strategies to tackle the ICT problems that threaten our planet. The development and delivery of this unit was a challenging exercise for both teachers and students, since the concepts of sustainability and Green IT concepts were new to our students, and the majority of them did not include them in their vocabulary. However, after several discussions, reading the unit materials, and completing several activities individually and with the team, they recognized and identified how the harm of technological innovation is causing huge damage to our environment and planet, especially in developing countries and among our children, since a single computer monitor can ‘contain up to 8 pounds (4kg) of lead’ (Watson 2010, 29). This lead poisoning can cause a range of insidious illnesses ranging from headaches and stomach pains, behavioural problems and anaemia, to delayed brain development in children (KidsHealth 2013). Our students’ feedback indicated (formal and informal) that the teaching team had been successful in changing the students’ mind-sets and presenting some solutions and resolutions to assist their community and country to adopt the sustainability and Green IT concepts, including IT strategies among the IT departments.

The ITS65 teaching team worked very hard with students in order to achieve outstanding and exceptional student feedback. To this end, they varied their instructional strategies and introduced innovations to transform the classes into more exciting, engaging and challenging experiences compared with traditional trans-missive approaches. The constructivist approach was employed in the ITS65 unit, to allow more collaboration and interaction between students and students, and students and teachers (Chichester, Hagglund, and Edhayan 2013). This approach promotes and enhances students’ communication skills (i.e. writing, research, debates, discussion, critical thinking and presentation) which serve students well in future studies and professional lives. Our teaching encourages students to develop confidence in their learning while making the entire process not only beneficial but rather enjoyable. Teaching allows lecturers to share their knowledge and expertise with their students and to support students’ development of their own understandings of the discipline.

Furthermore, the teaching of sustainability, Green IT and ICT requires passion, commitment, and a cutting-edge approach. Feedback needs to be provided (in person, to face, emails, as well audio) to students, especially via assessments and Wiki discussions, as this type of involvement will encourage and motivate students to engage with the unit and foster an interesting and enthusiastic atmosphere. In addition, to raise students’ awareness behind sustainability and Green IT, it was noted that reflective journals, Wiki, presentation and report writing are the best methods of assessments for altering students’ thinking values and opinions regarding the harmful effects on the planet of using ICT.

Overall, it was noted that the development and presentation of the ITS65 unit was an interesting and challenging experience, since this topic is highly relevant in the 21st century, and organizations and individuals should include the words ‘sustainability’ and ‘recycling’ in their lexicon in order to preserve as many raw materials as possible for the next generation. Finally, lecturers should keep up to date with global and local developments regarding sustainability, technology and new strategies to reduce the harm that ICT can bring to the planet.

Limitation

This study examined students’ reactions toward a postgraduate unit on sustainability and Green IT. The results lead to the conclusion that this unit raised the awareness and changed the lives of students since sustainability, and Green IT are of vital relevance these days. This study was

limited to 36 students; however, to strengthen the research aims and objectives, this unit could be introduced and taught in other universities locally and globally.

Conclusion

This study is concerned with the development and teaching of ITS65 unit to postgraduate students, in order to raise students' awareness of sustainability, Green IT, IT strategies, and the harm that ICT does to our planet. The development and delivery of this unit was a challenging exercise for the lecturers as well students, since these terms were outside their dictionary. The ITS65 unit materials and assessments were developed based on unit, degree, university and business needs and objectives, and obviously to match and satisfy students' requirements. The assessments were selected very carefully to promote students' communication skills, as well to increase their motivation, inspiration and enthusiasm for the ITS65 unit. Furthermore, teaching sustainability, Green IT, and IT strategies needs commitment, passion and cutting-edge awareness locally and globally.

Student's formal and informal feedback confirmed the study's aims and questions, as most of the students indicated that completing ITS65 changed their mind-set toward technology usage and recycling; moreover, diverse communication skills were promoted by finalizing various assessments for ITS65.

Finally, this study has presented an example of a sustainability unit designed for postgraduate students. It is essential to make such a unit available in the higher-education sector since universities play a major role in making students aware of their responsibilities regarding ICT usage locally and globally. Currently, our students are considered as the new leaders of the future; therefore, we the academics have a responsibility to raise student's awareness, and make them part of the solution not the problem, and this will lead them to become good stewards serving their countries and communities.

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