GENERIC GREEN SKILLS: WHAT DO ACADEMICIAN HAVE TO SAY

Mohd Zolkifli Abdul Hamid*, Zubaidah Awang2, Yusri Kamin1, Noor Azean Atan1, Sanitah Mohd Yusof1, Nur Syazwani Mohd Zolkifli1

1School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia
2Language Academy, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

*mohdzol@utm.my

ABSTRACT
As green technology continues to evolve in tandem with the growth of the 4th industrial revolution, the term ‘generic green skills’ has gained widespread attention among industry players and academicians. However, the exact meaning of this catchword is still ambiguous. To get a detailed explanation of generic green skills from the perspective of academicians, a preliminary study was conducted on university lecturers who are directly involved in inculcating awareness and instilling these skills in students. This study adopted a qualitative approach, using in-depth interview involving six senior lecturers from the Technical and Engineering Education, School of Education, Faculty of Social Sciences and Humanities, Universiti of Teknologi Malaysia. Raw data were then transcribed and analyzed using NVivo. Generic green skills are non-technical or soft skills which focus on sustaining environmental and energy saving initiatives. All activities which contribute towards the preservation of the environment and the conservation of energy are considered as part of generic green skills. More research needs to be done in this area to further understand the issue especially on identifying profiles of generic green skills.

Keywords: Generic Green Skills, Environmental Sustainability, Energy Conservation, Green Practices, 4th Industrial Revolution.

INTRODUCTION
Academic writing and scientific research on generic skills has been well documented. However, research on the term generic green skills is still scarce and unexplored. As we enter the green economy, and the threshold of the 4th industrial revolution, the importance of generic green skills is receiving greater attention. This study explored the perception of academicians on generic green skills. It is paramount to get a clear view from academicians since they are in direct contact with students in university who are the future human capital.

Saemah et al. (2011) suggested that graduates should master generic skills to ensure they will be able to secure a job upon graduation. In the mainstream of the development of science and technology, the need for generic skills must be in line with the need to create green jobs in the green technology industry. Hence, generic green skills have begun to get serious attention from industry players. At institutions of higher learning, especially those offering skills-oriented courses/programs, green generic skills should be inculcated in students. To enable it to be inculcated in the curriculum, academicians need to be aware of and understand what generic green skills are.

Rapid development of green technology industry is not only important in the quest to develop a nation based on the green economy; it also leads to efforts to produce future human resources with high awareness of environmental care. According to Shariff (2008), when the economy is seen to be expanding, training the workforce is vital to determine that future human capital needs focus on talents. Mustapha (2015) asserted that the labor market will be affected by the green economy. Consequently, various terms have emerged including clean production, green practices and green generic skills which create blurred meaning to people especially those who are directly or indirectly
involved in green technology industry. It is thus imperative to develop a deep understanding of this concept before it can be practiced and become a culture (green culture at work place).

The common notion that education is the best platform to inculcate generic green skills in students makes the role of academicians’ paramount as upon graduation, graduates are expected to be ready to be part of the entry-level workforce. To expedite the process of entering the workforce, graduates must be equipped with generic green skills also known as employability skills, non-technical skills and soft skills. Soft skills are the most desirable skill required by science and technology graduates to enter the workforce; which Coll and Zeqward (2006) refer to as behavioral skills. This corresponds with Pavlova (2009) interpretation that the behavioral component gives students the opportunity to act in accordance with their moral values. Since moral values are all about someone’s good activities, it becomes part and parcel of personal characteristics. According to Nik (2010), it is fairly obvious that personal competence is a critical component of soft skills, which refers to doing the right thing and doing it right. It also refers to decent work. In the same vein, Zaharim et al. (2009) described personal attributes as good attitudes and traits of an individual that are used to get, maintain and succeed in employment. Sodemann (2008) first emphasized that soft skills are both personal qualities and skills. However, when it includes ‘green’, it factors in environmental quality and sustainability. According to Mohd et al. (2016), soft green skill is a non-technical skill which encompasses the attitude and ability needed to attain the objective of sustainability. On the other hand, Kamis et al. (2017), incorporate technical skills into green skills i.e., the view expressed by Agus (2017) where green skills is imparting of both hard skills and soft skills.

Cognizant of the fact that a factory operating with industry 4.0 technology will reduce the involvement of employees (Zhou et al., 2015), it is imperative to produce future human capital categorized as crèam de la crèam. Although employee acquisition rate is expected to be low; industries will still need workers. Wan and Faizah (2017) stressed that there are still human related abilities that remain relevant making them important virtues of the human talents sought by the next industrial era. At the same time, Zhou et al. (2015) associates the concept of the 4th industrial revolution with green manufacturing industry. This was further emphasized by Adzmi et al. (2018). Companies require not only highly skilled workers but also generic green skills that fulfill the need of the green economy. This could be achieved by inculcating generic green skills into the curriculum at higher education or advanced skills institutions. Generic green skills are considered important non-technical skills which enable workers to contribute to the development of their work premises. Jobs in various sectors of industry, both the services and manufacturing, are now beginning to be oriented towards green jobs (Asnawi & Djatmiko, 2015) which need generic green skills. In the future, every job will be a green job (CEDEFOP, 2009). A green economy requires the development of generic green skills (among other skills) that are in demand in almost any occupation (Pavlova, 2011).

Wan and Faizah (2017) highlighted ten important skills required by employers in the 21st century which are complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. While, Mohd et al. (2016) identified 20 elements of soft green skills needed by Malaysian polytechnic students’ to enable them to be employed. Therefore, to meet the demand of the 4th industrial revolution, educators need to consider the relevant skills needed by future human talents (Faizah et al., 2017). Trained workers with generic green skills have a greater opportunity to be employed in the future and are a valuable asset who should be given serious attention by any country (Zolkiffli et al., 2016). Unfortunately, the understanding of generic green skills is still vague and inadequate not only to the graduates but also among educators.

This study explored the perception of academicians towards generic green skills. It is imperative to find out academicians’ knowledge about generic green skills as they are the ones entrusted to inculcate the skills across the curriculum inside and outside class.

**METHODOLOGY**

This study employed a descriptive research design with qualitative approach as the main means of data collection. Data were collected through in-depth interviews using semi-structured interview protocol.
and were analyzed immediately using NVivo. Respondents are senior lecturers from the School of Education, Faculty of Social Sciences and Humanities, Universiti of Teknologi Malaysia. All respondents have a Doctor of Philosophy degree majoring in Technical, Vocational and Engineering Education with various specializations ranging from electric and electronic engineering, building construction, and mechanical engineering up to living skills.

RESULTS AND ANALYSIS

Academicians considered Generic Green Skills as non-technical skills associated with efforts of maintaining good environmental quality. One of the academicians responded by saying:

“I assume, generic green skills are generic skill too, nothing new. The only difference is…. this (generic green skills) is more on effort to maintain the environment in good condition. For instance, awareness and habit to switch off computer after used is also a generic green skill too, whereby this could save electricity. Instead of letting the computer off to sleep mode itself, why not we switch off the power and take off power plug.” (R1-Intvw.1-GSnE)

It is undeniable that the statement above is indeed true. Through observations, each lecture room is equipped with a set of desk top computer and LCD (Liquid-Crystal Display) projector. Often, after the lecture is over, students and lecturer leave the class without switching off the computer; with the assumption that the next lecturer will use the computer. So, the existing computer although not in use, is still consuming electricity and this will increase the energy used.

Another response to the question “What is generic green skills?” was,

“It is a generic skills as we all already know, but the only thing is that, this generic skill is more on activities to save the energy used and maintain the environment by which the 3R’s is implemented.” (R2-Intvw.3-GSnE)

When further asked about the meaning of generic green skills, the same respondent commented,

Generic Green Skills is a skill needed by future employees which with this kind of skills, they can contribute toward environmental sustainability and consume less energy.

One respondent associated the meaning of generic green skills as non-technical skills which corroborate the efforts to maintain good quality of environment (R4-Int.5-GSnE). When asked about what needs to be done to maintain good environmental quality, the respondent responded that the best way is to implement what do we call as 3R’s, which refers to Reduce, Reuse and Recycle. This 3R’s is a very common term among students and also educators.

If employees are equipped with this skill, they can contribute towards efforts to sustain the environment, cut electricity cost, and make the surrounding work place clean and conducive. As industries are tied to the rules and regulations imposed by the government, and the need to get MS ISO 14000 (Environmental Management), industries must comply with environmental sustainability through not only using green technology but also implementing green practices. These green practices are parallel with generic green skills among workers.

“In my opinion, generic green skill is just another version of generic skill…or…sometime they call it as employability skill or soft skill. The difference between these two skills is…generic green skill is a skill which is specifically attuned to cater to keeping good environment. So…I think…anything with the purpose to maintaining the environment is called generic green skills”. (R3-Intvw.4-GSnE)

Another respondent described,

“In my class, I am practicing paperless activities whereby students are encouraged to submit their paperwork or assignments in electronic mode, which complied with the needs of e-learning. So, students must have competency in handling and using computers as a medium to interact, not only with lecturers, but also among their colleagues. I also noticed that lately students use handphones to
With the rapid advancement of technology, teaching technology in the classroom has also proliferated. Therefore, e-classroom is another term for establishing green practices in any teaching and learning premises. A clear example of this is the implementation of e-learning in the classroom. Teaching and learning in the lecture room is no longer chalk and talk. Instead, electric and electronic devices such as computer and LCD projector are fully utilized. To be able to cope with this green technology, students must acquire skills in using the computer and its application. This shows that ICT literacy is a must for all students. In addition, academicians too are required to fully utilize applications in the e-learning. As stated by Pavlova (2009), technology in education is seen as a means for developing knowledge, skills, attitudes and values (these are all generic skills) that allow students to maximize their flexibility and adaptability to their future employment.

By using computer and e-learning, its implication is on reducing the usage of paper and also printer ink, which indirectly contribute towards low-carbon society and environmental sustainability. In other words, students and lecturers need to master ICT (Information and Communications Technology) skills. This means, ICT skill is part of generic green skills, as they take into account the importance of reducing paper usage and printing.

The recent trend also shows that students are more prone to use their handphones to capture notes on the white screen in the lecture room and share them through media social platform such as WhatsApp application among friends. Nowadays, having a smart digital handphone is a normal phenomenon and it is not too much to say that it is a necessity and has become a lifestyle. By using smart digital handphones, not only can students share notes, photos and figures; online teaching and learning could also be done easily. The ability to use gadgets such as handphones could be classified as being digital skill literate.

**DISCUSSION**

The research findings showed that academicians viewed generic green skills as a branch of existing generic skills which focus more on efforts to maintain environmental quality. Any non-technical skill aimed at maintaining environmental sustainability and efforts in saving energy resources are considered as generic green skills. In this case, it can be concluded that generic green skills are not something new. Rather, it is an extension of existing generic skills focusing on efforts to minimize environmental degradation and to save energy. Indirectly, this answers the question raised by CEDEFOP (2009) of whether to create a new generic green skills or simply enhance the existing generic skills. This is in line with what Mohd et al. (2014) have concluded that generic green skills are the betterment of existing generic skills.

*Figure 1. The three pillars of Generic Green Skills from the perspective of academicians*
Figure 1 shows the interrelation between the three pillars of generic green skills: environmental sustainability, energy saving consumption and generic skills, from the perspective of academicians. The pillars interact with each other within which the generic green skills are applied. We might refer to the case of green classroom where e-learning (referring to environmental sustainability - paperless and no printer ink usage, which is towards low carbon society) is implemented, the practice of switching off computers and LCDs (energy saving consumption) together with generic skills (such as communication skill, leadership, group work, etc.) contribute towards generic green skills. In the same context (generic green skills), the tendency of many students to use handphones also indicates the necessity of digital skill.

In this context, environmental sustainability could be best interpreted as efforts to maintain good environmental quality such as practicing the 3R’s. Energy saving consumption can be best translated as any activity that could reduce the cost of electricity, for instance, switching off the computer and LCD in any teaching and learning premises after class is dismissed. This finding is corroborated by Mohd et al. (2016), who concluded that any activity which can mitigate environmental degradation and energy saving could be defined as green practices which leads to environmental sustainability. In such cases, green practice can also be referred to as the contingency of generic green skills. Obviously when someone voices out about ‘green’ they tend to relate it to the environment and it is also undeniable that many environmentalist refer to the word ‘green’ as green environment.

Fundamentally, generic skills can be learned (Zaki, 2014; Nik, 2010; Wentling, 1987) thus so can generic green skills. Dayue (2016) opined that green concepts can be instilled in the minds of students through lectures, presentations, discussion, promoting activities, experience exchange, and so on. Even to the extent of embedding green skills through co-curriculum activities (Yapin et al., 2017). In order to ensure the success of instilling generic green skills in students, it is of utmost importance that academicians must have a clear understanding of what generic green skills are i.e., generic green skills are closely related to green practices and green practices are the interpretation of self-awareness.

Green education is important for cultivating a workforce of the future equipped with the knowledge of ecologically friendly and sustainable technologies (Zelin, 2016). In the same vein, green education and training programs will play a significant role in enabling workers to participate in the green economy (Pavlova, 2016). Thus, education and the development of human resources constitute an essential relationship for most developing countries including Malaysia (Hazril & Abdullah, 2013) where educational reform may be the most important tool in the future of greening and sustainability (Baumgarten & Kunz, 2016).

CONCLUSION
Notwithstanding that the 4th industrial revolution may decrease the rate of employment; the process of developing future workforce equipped with generic green skill is undeniable and pivotal. To enable Malaysia to develop in accordance with the green economy, it is very important for future human resource development to be equipped with generic green skills. Academicians in higher learning institutions play an important role to instill awareness and guide students to master these generic green skills. Academicians view these skills as an advanced development of existing generic skills with a focus on conserving the environment and reducing energy resources consumption. In a nutshell, academicians view green generic skills from a relatively narrow scope, which revolve around sustainability of the environment as well as energy saving; without even considering renewable energy. Further studies are needed for a more in-depth understanding of generic green skills profile for workers particularly in the green technology industry.

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