L–19: Role of 5Rs for Sustainable Development

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Lesson – 19
Role of 5Rs for Sustainable Development

Learning Outcome: At the end of this lesson, you will be able to plan for the management of the 5Rs: Refuse, Reduce, Reuse, Repair, and Recycle for sustainable development to save this planet earth.

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1.0 INTRODUCTION

It is quite alarming indeed to see how the different types of ***wastes*** are piling up across the cities, towns and villages all over the world. In order to save this planet earth from hazardous effects of these wastes, it is high time, all people join hands and come together to take some concrete actions to address this issue. Cities and towns are expanding and space is becoming scarce to dump the refuse. It is the youth of this country, who must be made aware of this issue first. No other than the technical teachers is one such group of people who can and has the opportunity to influence the students whom they are teaching for 4 years of their stay on the college and university campuses. Therefore, in order to encash this opportunity, it becomes essential that the teachers first understand about these 5Rs are and other related aspects of these and only then, will be able to decide how to manage them. Once the teachers are convinced, then the message could be passed on to the young minds enmass, who would join the bandwagon to lend their helping hands to this noble cause of managing them.

2.0 CONCEPT OF 5Rs

Bea Johnson (Johnson, 2016) one of the successful activists has been practicing 'zero to waste' and the promoter of the concept of 5Rs for sustainable environment. The 5Rs stand for Refuse (also called 'Reject'), Reduce, Reuse (also called 'Repurpose', or 'Rethink'), Repair, and Recycle (also called 'Recover'). These 5Rs need to be addressed and managed well for sustainability.

Every year, lakhs of tons of *waste*s generated in various forms such as waste plastics, food waste, wrappings, bottles, boxes, cans, furniture, clothing and many more. Abella asks 'Where does it all go? Some 85% of our garbage is sent to landfills, where it can take from 100 to 400 years for things like cloth and aluminium to decompose. Glass has been found in perfect condition even after 4,000 years in the earth!' (Abella, 2019). So, the question is, what should be done? Table 1 shows the time required to decompose some of the daily use items.

As a technical teacher what should be our next move to tackle this problem? Not taking action is also a sin. Sensitise the engineering students about this issue by asking this question to them. Organise group discussions, seminars, debates amongst the students about solutions of this problem. Old and new ideas will come up that could make a change at least in some of the students. Therefore, what actions are to be taken is attempted to be explained in this lesson.

Table 1
Time Required for Decomposition of Some Sample Items

S. No.	Item	Time	S. No.	Item	Time
1	Tissue paper	2- 4 weeks	8	Plywood	1-3 years
2	Banana peel	2- 4 weeks	9	Leather shoe	25-40 years
3	Paper bag	1 month	10	Thermocol cups	50 years
4	Newspaper	1.5 months	11	Rubber material	50-80 years
5	Cardboard	2 months	12	Plastic bottles	450 years
6	Cotton glove	3 months	13	Aluminium	200- 500 years
7	Orange peel	6 months			

3.0 REFUSE

For environmental sustainability, the very first action to be taken regarding the use of anything is ***Refuse*** (or Reject) or delay in procuring that thing which are not needed. If that is not there in your life to start with, you'll never have to worry about how to get rid of them, or what to do when they are no longer fit for purpose. The best message that speaks louder than words is '*practice what you preach'*. Therefore, the engineering teacher has to 'walk-your-talk'.

There is a difference between 'want' and 'need'. Many things you may want but, it may not be needed in your life, as it may finally end up in the trash bin. Always, ask the question to yourself before buying anything, "Why am I purchasing this item?" or, "Do I want it or do I really need it now?" or, 'Can I delay it from buying as I already have an alternative for that item'?

Refuse to buy or accept products that can harm you, your organisation and the environment. For example, if you have a pen, do not buy a second pen till the current pen's life is over. Another example could be to stop using paper towels in the washrooms. Stop using plastic bags and always have spare cotton bags. Following are some other examples:

a) Refuse chemical solvents and use alternatives that are water based.
b) Say no to plastics wherever you can avoid. Use paper bags or cloth bags.
c) Refuse to accept materials from your store with unnecessary packaging that you will later have to pay for to dispose e.g. toothpaste inside a cardboard box and such others.
d) Refuse the freebies that companies give away, if you do not need it.
e) Refuse to buy a second vehicle (scooter or car), if you can manage with one. Or, if the public transportation is good, you can even avoid buying the first vehicle.

Think about everything and REFUSE what isn't necessary or defer their procurement for some time which may not be required later at all.

ACTIVITY 1

List some examples related to ***Refuse*** at your workplace.

4.0 REDUCE

For the cause of sustainability, as a technical teacher, the next step that you should take is to propagate the concept of ***Reduce.*** *Reduce* is to limit the amount of waste you create in the first place. This includes buying products with less packaging. Always ask the question to yourself, "What is the minimum amount necessary for anything?" Why would you wrap a pallet with 100 feet of stretch wrap if 80 feet will do the job? "Can I drink tea with half a teaspoon full, instead of one teaspoon full of sugar or drink tea without sugar at all"? And in the process, save your health as well. Reduce the amount of electrical energy you use and save *MONEY* in the process.

Consume less of everything. When you go to the market, buy your food with no plastic packaging. Avoid fast fashion and food waste. The quantity of electronic waste (E-waste) is increasing day-by-day. Before buying a new electronic gadget, stop and think. When an upgrade or new cell phone is launched in the market, think if you can continue with the current cell phone. Not buying extra new things is good for you, good for your family, good for the environment and you save a lot of money. Think what you can use less?

As technical teacher, think how you can inculcate this habit of *'reduce'* in your students. First you need to 'practice what you preach'. Following this plan at regular intervals organise activity or the other to remind the students about it. You could put up some cartoons or posters in the class, in the department and at several other places. Another strategy could be to show some relevant video clips time-to-time. Some debates, seminars and the like could also be organised.

ACTIVITY 2

List some examples related to managing ***Reduce*** at your workplace.

5.0 REUSE

Reuse (also known as 'Re–purpose' or 'Re–think') means to use something again either for its original purpose or to fulfil a different function (creative reuse) that could have been normally thrown away (e.g. Glass jars for food, plastic bags and so on). This requires a bit of thinking and creativity, but may not be all the time beautiful, but the purpose may be served. Often, reuse helps to save time, money, energy and resources. In broader economic

terms, it could make quality products available to people and organisations with limited means, while creating jobs and business activities that contribute to the progress of the economy locally and or globally as well.

Avoid using 'one time use and throw' articles. Choose items that have a longer shelf life, that can be repaired, and can be used again and again till its shelf life is over such as reusable electric kettles, coffee cups, cutlery, water bottles, shopping bags and such others. Use your tooth brush as a hair dye brush. Use torn clothes as foot mats, to clean shoes, as mops to clean the floor and so on. Use coffee mugs with broken handles as vases for aloe-vera plants and so on. Old bed sheets can be turned into small cotton shopping bags and handkerchiefs. Wood crates would be used to make different types of wooden items, such as benches and such others. Condensed water discharged by air conditioning units could be a good source of distilled water. Old buckets could become flowerpots and so on. Use your imagination to reuse before deciding at the end of product life.

Another way of *reuse* is to gift *(Figure 1)* to some people or to some organisation who would gladly continue to use it. For example, if you brought a high-end computer for your work, you may gift your still working old computer to some person or organisation who will use it happily. Or you could gift your old cell phone to some needy person and so on. In this way, E-waste could also be reduced. You may also donate your things to some school, NGOs, non-profit organisations so that the under-privileged are also benefitted.

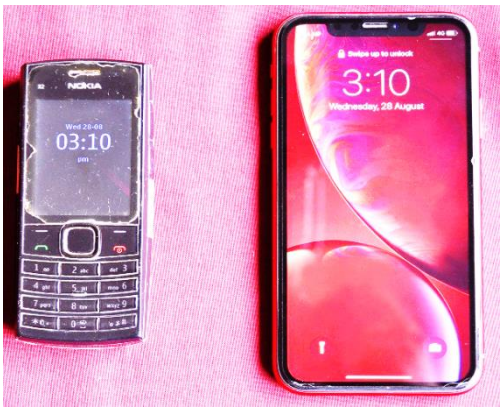

Figure 1 Example of Reuse. Small mobile could be gifted

ACTIVITY 3

Organise some ‘reuse tech fests’ as a technical teacher every year in the college, to spread the need and innovative techniques of ***reuse*** of various things.

Reuse has several advantages such as, reducing the same product being manufactured thus saving energy and raw materials, less disposable things and also the cost to dispose them off. Some old things may fetch more appreciable value because of better refurbishing. Refurbished things are much cheaper leading to cost savings and hence it could become a good business proposition creating jobs as well.

However, reuse has some demerits also such as sorting, cleaning and preparing of items take time. Some special skills are required to establish the functional throughput of the things when put to new uses. But when given to students, these demerits may even vanish depending on the enthusiasm of the students.

6.0 REPAIR

If the above mentioned 3Rs are not possible with the things that are required, then ***repair*** *(figure 2)* is the next option that should be taken up for a sustainable environment protection to continue. The only hitch is that it may take some time to get the things repaired. In earlier years, repairing of things was quite common. Repair shops were quite common in all cities, towns and villages. Most of the mechanical and electrical and electronic items were repaired and re-used thus reducing waste and saving the environment. But, currently, when more of *one-time* use items are being produced more and more, such repair shops are becoming less and less. However, the flip side is that, in this internet age there are several 'do-it-yourself' websites which if wisely tapped and if people are positively prodded (guided step by step), more citizens would repair the faulty items on their own and continue to use the things. This practice or habit if propagated is not only good for the environment, but also empowers people, and often saves money as well.

Figure 2: Repair Work

Every engineering student could be encouraged to harness the *repair* skills to some extent for the cause of sustainability. For this to happen, the teacher needs to take some extra efforts. Different types of 3-5-day training workshops could be conducted in the institute such as, 'electronic gadget repair', 'electrical gadget repair', 'water pump repair' and so on. This will spread the 'repair culture' in the community/society.

ACTIVITY 4

List some examples related to managing ***Repair*** at your workplace.

7.0 RECYCLE

Recycle (recover also comes in this category) means the breaking down of those things from which raw materials emerge out for the manufacture of new products. It means that such products go through a mechanical or chemical process to change their form. ***Recover*** is to convert waste into resources (such as electricity, heat, compost and fuel) through thermal, biological or some other means. However, this 'R' should be taken up only when the above-mentioned 4Rs have been attempted. Following are some of the things, which can be re-cycled.

a) Paper can be recycled up to seven times, but after that the fibres lose their strength.
b) Plastic can only be recycled a few times before it is frequently broken down and must be sent to landfill.
c) Metal and glass can be broken down and recycled indefinitely.
d) food wastes into composted soil or as a food for a local farm.

e) All types of fabric dirty or otherwise.
f) All electronic items recover metals and other materials for reuse.

Recycling will help everyone to realise about all that you put into the trash bin and a chance to rethink your future purchases.

ACTIVITY 5

List some examples related to managing ***Recycle*** at your workplace.

8.0 SUMMARY

The 5Rs: Refuse, Reduce, Reuse, Repair, Recycle, issues strictly in this sequence need to be addressed and managed for sustainability. Earlier, there were only first 3Rs. Now the remaining 2Rs are also considered for the cause of sustainability. The first 3Rs - refuse, reduce, and reuse - are targeted for zero waste, which is all about limiting consumption in order to stop exploiting the Earth's resources. So, if the first 3Rs are not manageable, only then you may go in for adapting the remaining 2Rs. 'The remaining 2Rs- repair and recycle - target the second goal, which is only consuming goods that can be fully recycled, either back into the ecosystem itself, or back into the economy'(Johnson, 2016). If every citizen focuses on taking limited things of everyday life, when things are purchased, keeping in mind this hierarchy of the 5Rs, they will realise how much things that they really DID NOT need. This way the waste produced can be drastically reduced. ***Making even a single change in your life with regard to the '5Rs' will make a big difference to the whole world***.

ACTIVITY 6

Read the case given in Appendix A and justify to which of the 5Rs does the case belong to.

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Appendix A

Case of 'Buy Nothing Project'

[**Courtesy**: Dr. Samuel N. Mathew Ph.D. former Director of National Institute of Speech & Hearing (NISH), Trivandrum, Kerala]

Buy Nothing Project–***Giveaway what you have and ask for what you want with no strings attached.*** Few days back I saw a large plastic box kept on the front steps of our home in Delaware, USA. It had some baby Abby's (my granddaughter) clothes too small for her now. I asked Mary, my daughter-in-law, why was it kept outside. She said it was meant for someone and they will come and pick it up soon. Again, two days later, I again saw another box on the front steps of our home again with a different set of stuff. I asked Mary, what this is for and she said it is meant for someone else and they will come and pick it up. Then she explained that she is part of the local ***"Buy Nothing Project Facebook Group"*** and explained how it works. To say the least, I just admired the idea behind and the greatness of the hearts who started this movement!!This was a classic example of sustainability. Following are some links.
https://buynothingproject.org/ and their Facebook page,
https://www.facebook.com/BuyNothingProject/.

This venture started as a small Facebook group formed by two women from Washington in 2013 to give away what they have freely to their neighbourhood families. Just an act of unconditional giving. This has become a movement and has spread to over 15 countries worldwide with hundreds of local groups. It is catching on like wild fire. No selling, bartering – just giving between individuals who live nearby within a short driving distance. Very fascinating concept. Giving is an act that stimulates everything good in both the giver and the receiver. In world of selfish grabbing and racing to overtake others, giving is about being considerate of others and willingness to share what we have.

After Airbnb and Uber, where common people are involved in sharing what each has for a price, ***this is just free giving*** from the abundance of what you have with no strings attached. On the website it reads ***"Buy Nothing Groups = Random Acts of Kindness All Day Long".*** In each of the US states there are large number of groups. In Delaware USA where we live (which is the one of the smallest states in the US) there are 16 groups and the local group where Mary is a member there are 294 members. In India, currently there are only 4 groups currently in Bangalore Electronic City (68), Vizag (19), Thane, Mumbai (78) and Navi Mumbai (15) with a total of 180 members.

Coming back to our situation, Mary was giving away stuff she was not using anymore. In addition, she described how one could borrow stuff for short periods. She got some heavy winter clothing for the Mammoth Mountain trip from a neighbour, which she returned as soon as she came back. She showed a child's football goal post she got from the group. This whole idea makes sense. In a world of consumerism, we all have so many stuffs that we do not need any more and ***we just keep it because we spent money on it***. We do not want to throw it away in trash. This is one good way of making good use of it.

They have guidelines for starting a new group https://buynothingproject.org/start-a-group/. The rules are all laid out very well to facilitate interaction in a very regulated civilised manner

DISCUSSION FORUM

Start a discussion on social media on some idea of yours to implement any one of 5Rs and ask for suggestions from students/peers.