Article Type: Research Paper/Literature Review/Systematic Review/General View/etc.

IMPLEMENTATION "STUDENT ACTION TOOLKIT" IN THE FRAMEWORK OF CIRCULAR ECONOMY TO CREATE GREEN TALENT

Moch Rafi Luthfiansyah Buchori, Ratna Lindawati Lubis

Abstract

Research aims: This research is based on the phenomenon where the number of higher education graduates continues to increase, yet unemployment rates remain high. At the same time, there is a gap in meeting the demand for green jobs needed by companies to implement a circular economy approach.

Design/Methodology/Approach: The study employs a mixed-methods approach, utilizing questionnaires based on the Student Action Toolkit and in-depth interviews to explore understanding of the circular economy through the 9R framework.

Research findings: show that students have effectively implemented the Student Action Toolkit and possess adequate understanding of the 9R framework. However, certain 9R concepts were not implemented because students activities were not aligned with those elements

Theoretical Contribution/Originality:

Practitioners/Policy Implications: The primary challenge in applying the circular economy lies in generating ideas and processing them, although this does not pose significant barriers

Research Limitations/Implications: This research underscores the critical role of higher education in shaping students as green talents ready to contribute through the circular economy.

Keywords: Circular Economy, 9R Framework, Green Talent, Student Action Toolkit, SDG, Green Job

AFFILIATION:
[1] Master of Management Program, Faculty of Economics and Business, Telkom University

***CORRESPONDENCE:**
email@email
Phone number:

THIS ARTICLE IS AVAILABLE IN:
http://journal.umy.ac.id/index.php/mb

DOI: 10.18196/mb.xxxxxxxxx

CITATION:
Name. (20xx). Title. *Jurnal Manajemen Bisnis*, xx(x), xx-xx.

ARTICLE HISTORY
Received:

Revised:

Accepted:

INTRODUCTION

Climate Change and Circular Economy

Climate change has become an urgent global challenge, with significant impacts on the environment, health, and economy. One of the main drivers of the climate crisis is the continuously increasing greenhouse gas emissions, which are produced by various human activities. In Indonesia, these emissions not only threaten environmental sustainability but also pose potential economic losses. According to a study by the Ministry of National Development Planning (Bappenas), climate change is projected to cause economic losses of up to IDR 544 trillion in 2024.

Therefore, innovative solutions such as the circular economy become highly relevant to reducing greenhouse gas emissions and mitigating the negative impacts of climate change (tempo.co, 2022). Circular economy activities can be carried out by individuals, groups, or companies using the 9R method, where a larger R number (R9) tends to indicate a linear economy, and a smaller R number (R0) is closer to a circular economy. The 9R method in the circular economy is used as a principle to maximize the utilization of existing resources with the following principles:

The circular economy is a restorative approach aimed at optimizing resource utilization through the 9R framework. This principle emphasizes waste reduction, resource efficiency, and a transition to renewable energy. By implementing the circular economy, Indonesia is expected to increase its Gross Domestic Product (GDP) by IDR 593-638 trillion by 2030, reduce waste by 18-52%, and create 4.4 million green jobs (medcom.id, 2023).

High Unemployment Rate

One of the parties capable of applying circular economy understanding within a professional scope is higher education institutions, specifically universities and students. As stated by Qu et al. (2020) in de la Torre et al. (2021) and Renfors, Sanna-Mari (2024), "Higher education institutions are increasingly seen as strategic agents and key drivers supporting the transition towards a circular economy, responsible for contributing to the transition through their curricula and equipping students with a set of competencies that ensure a more sustainable future." However, before reaching a professional level where they can contribute as drivers supporting Indonesia's transition to a circular economy, this potential is hindered by students' inability to engage in employment or their status as unemployed individuals.

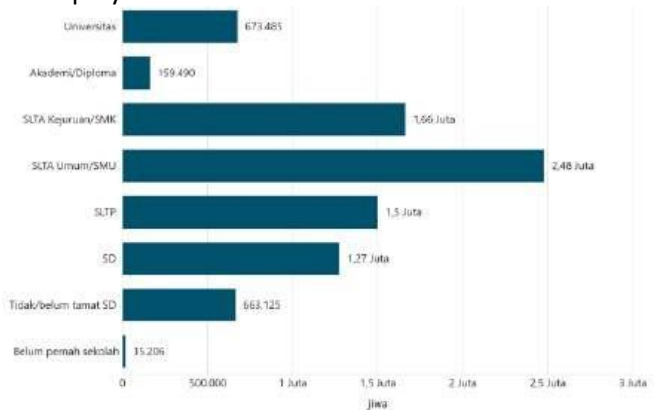

Figure 1.1 Unemployment Rate by Completed Education Level
Source: Databoks.katadata.co.id (2023)

It is known that Indonesia's unemployment rate ranks second in Southeast Asia, with the workforce age group of 15-24 years. The distribution of this unemployment is contributed by higher education levels, where universities account for 832,975 individuals.

This phenomenon illustrates that the workforce is growing, with the number of graduates rising to 7.1 million in 2022, but job acceptance rates have not kept pace, leading to a high unemployment rate, especially among those with higher education degrees. This was also highlighted by a source interviewed by Kompas (2024), who, after graduating with a bachelor's degree, pursued a master's degree to add value to themselves. However, this became another issue where, despite holding a master's degree, the individual still had not found a job, as they were seen as a fresh graduate without the necessary work skills.

As stated by (ellenmacarthurfoundation.org, 2024), the transition to a circular economy still depends on how individuals and organizations learn to innovate and apply the skills they have acquired in real-life situations. The education sector, from primary schools to postgraduate studies, plays a crucial role in ensuring that students of all ages are equipped with the key skills and knowledge needed to apply circular thinking in their chosen careers. To support this transition in education, the concept of education circular economy is implemented. Education circular economy is closely related to the fields of management and entrepreneurship. The paradigm of entrepreneurship as a core process for advancing knowledge in the technical domain for valuable and sustainable innovation. Viewing the circular economy from an entrepreneurial perspective means exploring the dynamics related to the innovation processes that support the creation of innovative entrepreneurship, as well as the human capital competencies required to describe and implement the transition processes needed in the circular economy (Kirchherr and Pisciscelli, 2019) in (Vechio and Secundo, 2021).

The Master's program in Management at Telkom University, with 362 active students with 76 in Regular and 37 in Fast Track, may face similar challenges as other programs in addressing high unemployment rates. Many students are not employed, and may lack the skills needed to transition successfully into the workforce, unlike those in the Executive and Professional programs.

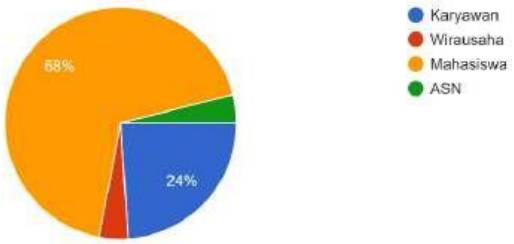

Figure 1.2 Master's in Management Students' Employment at Telkom University
Source: Researcher's Processed Data (2024)

Based on the initial data obtained, 68% of 30 Master's in Management students are those who focus on learning and have not yet secured employment. The worst outcome that could arise from the phenomenon above is that these students will contribute to the growing unemployment rate in Indonesia without possessing the necessary skills in the circular economy.

Opportunities for Green Talent

The high unemployment rate does not necessarily make the chance of finding work impossible. As explained earlier, the climate crisis requires Indonesia to adopt a circular economy approach, which in turn creates new opportunities in the job market, particularly by generating 4.4 million green jobs. This opportunity exists because the demand for green jobs is currently rising, yet the availability of green talent is insufficient to meet this need. Only 1 in 8 workers possess one or more green talents (LinkedIn, 2023). To be considered a green talent, a worker must have at least one green skill that supports professional work, one of which is an understanding of 3R practices (Hamid Nasir,2019). This creates an opportunity for students to secure employment after graduation, as the demand is increasing while the supply is limited. With Indonesia moving towards a circular economy, the potential to maximize this opportunity is greater than ever.

The Important Role of Students and Higher Education

However, the success of the transition to a circular economy does not solely depend on government policies, but also on the involvement of various stakeholders, including higher education institutions (Tiippana-Usvasalo et al., 2023 in Renfors, Sanna-Mari, 2024). Universities play a strategic role in building the competencies needed to support this transition. As stated by Qu et al. (2020) in de la Torre et al. (2021) in Renfors, Sanna-Mari (2024), "Higher education institutions are increasingly seen as strategic agents and key drivers supporting the transition to a circular economy, responsible for their contribution to the transition through their curricula and providing students with a set of competencies that ensure a more sustainable future.". Higher education plays a key role in addressing this gap by providing relevant curricula, innovative teaching methodologies, and opportunities for direct engagement with the industry to apply circular economy thinking. According to Giannoccaro et al. (2021) in Renfors, Sanna-Mari (2024), education circular economy (ECE) is the relationship between teaching roles in higher education to support the transition to a circular economy by examining how circular economy principles are integrated into various disciplines and curricula using the most appropriate teaching and learning approaches for the content.

This study examines the implementation of the Student Action Toolkit within the 9R circular economy framework at Telkom University, aiming to develop green talent. It also evaluates students' perceptions of circular economy principles and suggests strategies to enhance the university's role in sustainability, equipping students with green skills for future careers.

1. How is the implementation of the Student Action Toolkit among S2 students at Telkom University?
2. What are the students' perceptions of the implementation and the challenges faced in the 9R circular economy?
3. What strategies can Telkom University implement to create green talent that can apply circular economy practices?

Literature Review and Hypotheses Development (Quantitative) or Literature Review (Qualitative)

Circular Economy

According to the Ellen MacArthur Foundation (2022), circular economy is an industrial economic approach intentionally designed to be restorative. This approach aims to create efficient flows of materials, energy, labor, and information to support the restoration of natural and social capital. Circular economy also focuses on reducing energy consumption per unit of production and encourages a transition towards the use of renewable energy through planned design, where every element in the economic system is considered a valuable resource.

9R Framework

The 9R concept, developed by UNDP and BAPPENAS, provides a comprehensive guide to implementing circular economy, going beyond the traditional 3R principles. In this concept, the closer it is to R0, the closer it aligns with the circular economy principles,

while the closer it is to R9, the more it tends to resemble a linear economy. Circular economic activities can be conducted by individuals, groups, or companies with three main categories:

Table 1.1 9R Circular Economy Framework

Classification	Concept	Name	Description
Creating and Using Products Smarter	R0	Refuse	Avoid the use of new products if other products provide the same benefits.
	R1	Rethink	Use products more intensively, for example, through multifunctional design or sharing usage.
	R2	Reduce	Reduce material consumption by increasing production efficiency.
Extending Product Lifespan	R3	Reuse	Reuse products that are still in good condition.
	R4	Repair	Repair damaged products so they can be reused.
	R5	Refurbish	Restore old products so they function like new.
	R6	Remanufacture	Use components from old products to create new products with similar functions.
	R7	Repurpose	Use parts of old products to create new products with different functions.
Extracting Value from Materials	R8	Recycle	Process old materials into new materials, even if the quality may decrease.
	R9	Recover	Extract energy from materials through combustion processes.

Source: UNDP - Bappenas (2022)

By using the 9R concept, circular economy can maximize resources and minimize waste. The lower levels of this concept (R0-R2) reflect a more sustainability-driven approach compared to the higher levels (R8-R9), which are closer to the characteristics of a linear economy (UNDP-BAPPENAS, 2022).

Green Talent, Green Skill, Green Job

To support involvement in the circular economy within the job industry, green talent is needed. Green talent is a combination of workforce development with sustainable environmental development. Therefore, green talent holds potential in transforming as a crucial contributor to economic and social development (Song and Xie, 2019). In this economic and social development, green talent is required to have green skills. A green talent can be considered as such if they possess at least one green skill to support their professional role in a green job (LinkedIn, 2023). A green job is a job that contributes to preserving or restoring the environment, whether in traditional sectors like manufacturing and construction or in emerging green sectors such as renewable energy and energy efficiency. However, the output or services are not always based on environmentally friendly production processes and technologies. Green jobs can also be distinguished based on their contribution to more environmentally friendly processes (Organisasi Perubaruhan International, 2016).

Sustainable Development Goals

The definition of the SDGs addressed in the Student Action Toolkit: Sustainable Development Goals (SDGs) are a set of goals established by the United Nations (UN) to achieve a better and more sustainable life for everyone on the planet. There are 17

interconnected SDGs that support and complement each other in addressing various global challenges (sdgs.bappenas.go.id, 2024).

SDG goal 4 focuses on ensuring inclusive, equitable, and quality education, as well as promoting lifelong learning for all (sdgs.bappenas.id, 2024). To achieve this goal, 10 targets have been set to be achieved by 2030. One of the targets relevant to this research is target 4.7, which encompasses education for sustainable development and global citizenship. This target aims to ensure that by 2030, all learners acquire the knowledge and skills needed to support sustainable development. It includes various aspects such as education for sustainable lifestyles, respect for human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and its contribution to sustainable development.

Student Action Toolkit

To achieve the SDGs by 2030, the implementation can be carried out through the Student Action Toolkit, launched by the University Global Coalition. The University Global Coalition is a group of 137 university members committed to the SDGs, aiming to carry out activities worldwide to achieve the SDGs and educate students to become leaders in facing global challenges. According to the University Global Coalition (2021), the Student Action Toolkit involves organizing various actions across multiple areas, including: (1) changing personal actions in daily life, at home, and within the community to apply circular economy principles, (2) personal efforts as a student to engage classmates and other students, (3) requests and expectations for the university (University Global Coalition, 2021).

The Student Action Toolkit also provides benefits for students, including:

1. Enhancing students' understanding of the most pressing global challenges, as articulated in the SDGs, and inspiring them to actively participate in driving change and discovering new solutions.
2. Developing global competencies and leadership skills needed for students to collaborate effectively across cultural and national boundaries, as well as across disciplines and sectors, in creating a more sustainable future.
3. Engaging in actionable research, sharing knowledge, and innovating in collaboration with local and international organizations to pursue new approaches to achieve the SDGs.
4. Interacting with both private and public sector actors.
5. Acknowledging the impact of operations on key sustainable development issues.
6. Communicating progress publicly and being accountable for the results.

Previous Research

These theories serve as the foundation for this research, which also draws upon earlier studies with several similarities. Previous research has been used to support this study, particularly highlighting the important role of higher education in the implementation of the circular economy within the professional domain.

As stated by Qu et al. (2020) in de la Torre et al. (2021), cited in Renfors, Sanna-Mari (2024) "higher education institutions are increasingly viewed as strategic agents and key drivers supporting the transition to a circular economy, responsible for contributing to the transition through their curricula and equipping students with a set of competencies that guarantee a more sustainable future."

This view is also expressed by Tiippana-Usvasalo et al. (2023) in Renfors, Sanna-Mari (2024). Circular economy is gaining more interest at the higher education level because it serves as the best way to educate society and initiate the transition from a linear economy to a circular one. Thus, higher education plays a crucial role in educating society and leading the transition from a linear economy towards a circular economy.

Meanwhile, according to Giannoccaro et al. (2021) in Renfors, Sanna-Mari (2024), Education Circular Economy (ECE) is the connection between teaching roles in higher education and supporting the transition to a circular economy by examining how circular economy principles are integrated into various disciplines and curricula. This integration is achieved using teaching and learning approaches that are most suitable for the content. The active role of students in this learning aligns with the views of Lubis and Ghina (2020). Education for Sustainable Development (ESD) is a holistic and transformational education that encompasses aspects such as content, learning outcomes, pedagogy, and the learning environment. ESD not only integrates issues like climate change, poverty, and sustainable consumption into the curriculum but also encourages the creation of interactive and learner-centered learning settings. ESD requires a shift in paradigm from teaching approaches to learning approaches. This approach necessitates transformative pedagogy focused on action, supporting independent learning, active participation, collaboration, problem-based learning, interdisciplinarity, and the connection between formal and informal learning. Only with such pedagogical approaches can the key competencies needed to support sustainable development be developed.

Therefore, the nature of the learning system and the active roles of both educators and students themselves can create an environment that supports the education circular economy. This is also demonstrated by research conducted by Fitria & Yuliana (2018), where eco-innovation, eco-commitment, and eco-opportunities have an impact on eco-campus. This shows that Telkom University students have a desire to create innovations, commit, and take advantage of eco-related opportunities, which can lead to the creation of an eco-campus in the academic environment.

In a study conducted by Farooq et al. (2021), the application of ecological employee behavior in the workplace aims to achieve sustainability goals. There are challenges in implementing this in the workplace, such as lack of infrastructure. To improve knowledge and awareness in promoting such practices, environmental training is necessary. At the university level, policy makers among academic staff are instrumental in understanding the challenges and solutions in practice to achieve sustainable goals. Such environmental training programs can increase environmental awareness and knowledge, leading to positive actions towards the environment.

Similarly, as stated by Akbar et al. (2024), the implementation of university policies through consistent training programs can shape perceptions and influence behavior towards achieving waste reduction. Furthermore, it highlights that involvement and support from lecturers and educational staff lead to and enhance collaboration activities with partner organizations in the form of socially and environmentally sustainable actions.

One of the applications of knowledge and skills in the education circular economy that is closely related to circular economy principles in university education can be found in the fields of business management or entrepreneurship. The entrepreneurial paradigm acts as a core process to advance knowledge in the technical domain for valuable and sustainable innovation. Viewing the circular economy from an entrepreneurial

perspective means investigating the dynamics related to innovation processes that support the creation of innovative entrepreneurship, as well as the human capital competencies needed to describe and implement the transition processes required for circular economy practices (Kirchherr and Pisciscelli, 2019 in Vecchio and Secundo, 2021). The 9R concept supports these findings, as it highlights the importance of understanding the 9R circular economy framework to support workplace skills. As revealed by Amudjie et al. (2022), the study of six out of the nine circular economy principles under the 9R framework found that professionals had a moderate awareness of these principles, including repair, recycling, renewable energy use, reduction, and redesign. The findings also revealed that only two of the six principles (repair and reuse) were moderately practiced among professionals.

Research Methods

This study uses the explanatory sequential mixed methods approach, which is a research method designed with a strong quantitative background followed by a qualitative approach to explore further. This method involves data collection in two phases: the first phase begins with quantitative data collection, then the results are analyzed to plan and expand the second phase, which is qualitative. The goal of this approach is to provide a more comprehensive understanding of the phenomenon under investigation (Creswell, 2018).

As part of this method, the study also uses a case study approach. According to Creswell (2014), a case study is a research strategy conducted to thoroughly investigate a phenomenon using various data collection techniques. This study focuses on Master's in Management students at Telkom University, specifically in Regular Class 29, to collect data from relevant respondents.

This research is non-interventionist, meaning the researcher does not directly intervene in the events occurring. Primary data is collected through interviews with informants and observation of the ongoing phenomena. The researcher acts as an observer without influencing the events or activities taking place. This allows data to be collected in its natural state, without any external influence that could alter the dynamics or outcomes of the study (Sekaran & Bougie, 2017).

The research environment is conducted in a non-contrived setting, referring to a natural environment, specifically within the Master's in Management program at Telkom University, Regular Class 29. The researcher does not actively participate in the ongoing activities but only observes to identify problems and solutions that emerge in relation to the phenomena occurring. This study is conducted in a setting where activities proceed as usual within the educational environment (Sekaran & Bougie, 2017).

The implementation of the Student Action Toolkit refers to (1) changing personal actions in daily life, at home, and within the community to apply circular economy principles, (2) personal efforts as a student to engage classmates and other students, (3) requests and expectations for the university, with a total of 104 questionnaire items. In addition, interviews were conducted with 12 informants using the 9R circular economy framework (1) Refuse, (2) Rethink, (3) Reduce, (4) Reuse, (5) Repair, (6) Refurbish, (7) Remanufacture, (8) Repurpose, (9) Recycle, (10) Recover, UNDP - BAPPENAS (2022).

This research involved questionnaires and interviews, which will be conducted with respondents who are active students in the Regular Class 29 Master's in Management program at Telkom University. These characteristics are important to provide a comprehensive picture of the respondents used in this study.

Table 1.2 Respondent Characteristics

No	Characteristic
1	Active student of Telkom University
2	Regular Class 29, Master's in Management
3	Not employed yet

Source: Processed by the Researcher

The questionnaire is used in this study as a tool to collect data on the implementation of the Student Action Toolkit, which encompasses the thoughts, feelings, attitudes, beliefs, values, perceptions, personality, and behaviors of the respondents (Larry Christensen, 2005, in Sugiyono, 2018). This method typically uses a Likert scale to measure the data. Sugiyono (2018) states that this scale is effective in identifying the attitudes, opinions, and perceptions of both individuals and groups/communities; Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA).

Tabel 1.3 *Student Action Toolkit*

No	*Student Action Toolkit*	1 SD	2 D	3 N	4 A	5 SA
Change personal actions in daily life, home, and community in implementing circular economy						
1 -57		1	2	3	4	5
Personal efforts as a student and also to involve classmates and other students						
58 - 87		1	2	3	4	5
Requests and expectations for the university						
88 - 104		1	2	3	4	5

Source: Data Processed by Researcher

In-depth interviews are conducted based on the survey results from students to explore the extent to which they understand and implement the circular economy framework. The focus of this research is to delve into students' understanding and the implementation of the Student Action Toolkit, which refers to the 9R circular economy framework. The results of these interviews will serve as a foundation to understand how well students comprehend and apply the Student Action Toolkit within the context of the 9R circular economy framework, aiming to foster green talent and provide input for designing strategies for Telkom University to develop students as green talent, ready for the future. The questions to be asked in the interviews are as follows:

1. How has the implementation of the (R concept) been carried out?
2. What challenges have been faced in implementing the (R concept)?

Thus, there will be a total of 20 questions, with 2 questions for each of the Rs, ranging from (R0-R9) in the 9R framework.

Results and Discussion

From the questionnaire with 104 statements in the Student Action Toolkit, it shows that students have actively engaged in sustainability projects, with:

1. Changing personal actions in daily life, at home, and within the community to implement circular economy principles.

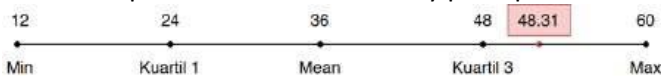

Figure 1.3 Results of the Student Action Toolkit Questionnaire Session 1
Source: Processed by the Researcher

From the research results related to the point of changing personal actions in daily life, at home, and within the community to implement the circular economy, the average score was 48.31. This indicates that respondents have shown a very positive attitude and have actively implemented changes in personal actions in daily life, at home, and within their community to apply the values of the circular economy.

2. Personal efforts as students and involving classmates and other students

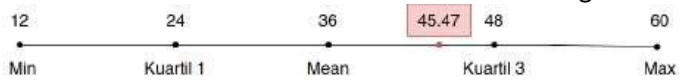

Figure 1.4 Results of the Student Action Toolkit Questionnaire Session 2
Source: Data Processed by the Researcher

From the research results related to the point of personal efforts as students and involving classmates and other students, the average score was 45.47, indicating positive results with respondents demonstrating personal efforts as students and involving classmates and other students in the process.

3. Requests and Expectations from Students for the University

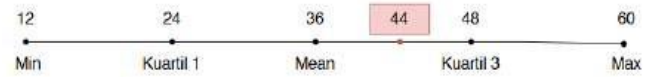

Figure 1.5 Results of the Student Action Toolkit Questionnaire Session 3
Source: Data Processed by the Researcher

Based on the average total score results for Session C, it indicates that the points related to the requests and expectations for the university have been applied by the respondents according to the Student Action Toolkit.

The Student Action Toolkit questionnaire results show that all students understood their roles and participated in activities supporting SDG implementation within the circular economy context. Follow-up interviews were conducted to explore how students applied the 9R framework and the challenges they faced, providing insights into how these actions reflect their skills for future workplace applications

1. Refuse

Implementation:

Students have implemented the concept of "Refuse," where the majority of students avoid using new plastic bags when shopping at minimarkets. They tend to either not use plastic bags at all or opt for bags they already own.

Challenges:

There are no significant challenges, as long as students can perform this action. The only exception is when they forget to bring their own bags or need to buy large quantities of

items, as personal bags may not be sufficient in certain situations, forcing them to use plastic bags or buy new eco bags from minimarket.

2. Rethink

Implementation:

Students have implemented "Rethink" by considering the purchase of non-disposable clothing that can be reused continuously. Another example is when buying gadgets, they think about the urgency of purchasing the product and how long it will last, so they avoid buying gadgets repeatedly in the near future.

Challenges:

There are no significant challenges, as this has become a regular practice, and students have done their research to select products with longer lifespans.

3. Reduce

Implementation:

In the "Reduce" phase, students have reduced unnecessary paper usage to avoid wastage, cut back on purchasing items that aren't really needed, reduced excessive water consumption, and turned off lights when not in use. Some students even think about using automatic lights that turn off or on at certain times. They also reduce plastic usage at minimarkets when it's unnecessary.

Challenges:

There are no significant challenges in this area because it has become a habit to reduce consumption or unnecessary usage, such as turning off lights when not in use or unplugging electrical appliances when leaving for extended periods.

4. Reuse

Implementation:

Students implement "Reuse" by using paper that is still usable for personal purposes, thereby avoiding using new paper for certain needs. Additionally, they reuse containers or food packaging for storage or as containers for cooking ingredients.

Challenges:

There are no significant challenges, as it is a normal practice to reuse items rather than buy new ones. The only challenge arises when items can no longer be reused because they have reached the end of their useful life or are no longer necessary for reuse.

5. Repair

Implementation:

Students have applied "Repair" by fixing old, damaged gadgets by replacing specific components so that they can continue to use the gadget. This principle is also applied to other items such as shoes. cloths or sandals, which are repaired to extend their lifespan.

Challenges:

The challenges in this phase typically arise when repairing becomes too costly or impractical compared to replacing the item altogether, especially when certain components are difficult to find or too expensive to repair.

6. Refurbish

Implementation:

Students apply this concept by replacing components in old gadgets, such as phones or laptops, that have decreased in performance, with new components to restore functionality and improve performance.

Challenges:

Similar to repair, this process is difficult to do alone, so it requires collaboration with a third party that has more expertise. Additionally, there are cost challenges in replacing components that are no longer usable to ensure the main product can continue to function.

7. Remanufacture

Implementation:

For remanufacture, students apply this principle to electronic products by replacing components in items like TVs or game consoles that are no longer usable, and using those parts in other similar products to keep them functioning properly. Another application includes using old clothes that are no longer worn as additions to custom new clothing.

Challenges:

The challenge in implementing this principle is the knowledge required to carry out the activity. Since it cannot be done alone, external help is needed, and there are costs associated with the process.

8. Repurpose

Implementation:

A simple and widely practiced implementation by students is using old cloth or clothing as rags or cleaning cloths. There are also students who repurpose plastic bottles as media for hydroponics, and old tires and ropes to create swings.

Challenges:

The challenge in implementing this principle is the need for creative ideas to repurpose unused items into something with a different function. However, there are no significant challenges that hinder the implementation of this concept.

9. Recycle

Implementation:

For recycling, not all students implement this principle directly. Some students provide recyclable products to third parties or stores or brands that sell those products to be recycled again. Other students recycle paper by reusing old paper, turning it into pulp, and drying it to create new paper

Challenges:

Not all students apply this principle directly, as recycling requires additional time and effort, which is not done regularly. Furthermore, not all students have the ideas or skills to implement this concept. There is also a challenge in needing third-party assistance, which depends on the service providers available.

10. Recover

Implementation:

Not all students implemented the Recover principle as it involves utilizing energy from products, which is not relevant in their daily lives. Some students applied it by converting used cooking oil into biodiesel, although they outsourced the process to third parties. Other students only applied it to organic waste, turning it into compost for plants, rather than using it for biogas production.

Challenges:

The challenges encountered were limited to the activities, skills, and the need to implement the Recover principle. This is because it requires effort and expertise, such as the processing of used cooking oil into biodiesel, which involves several processes and knowledge to produce biodiesel that can be used. In the case of organic waste, it requires

a long process and waiting time to turn waste into compost. Therefore, not all students implemented the Recover principle; they would only engage in such activities if there was a specific need or expertise to manage the waste. If they were unable to carry out the process, they tended to discard waste or products that could not be used without converting them into energy or other products.

The majority of the 12 students from Reguler 29, S2 Management at Telkom University, understand and apply the 9R framework in daily life. No significant challenges hinder implementation, though some relate to creativity, knowledge and skills. Students can collaborate or seek help when needed, considering effort and cost.

Conclusion

Overall, based on the three sessions in the questionnaire regarding the Student Action Toolkit, all aspects of these sessions received positive results, including:

1. Personal actions in daily life, at home, and in the community to apply circular economy principles, with a score of 48.31 out of 60.
2. Individual efforts as students to engage classmates and other students, with a score of 45.47 out of 60.
3. Student requests and expectations from the university, with a score of 44 out of 60.

The results from the three sessions indicate that all students have successfully applied the Student Action Toolkit, demonstrating their understanding of their roles in supporting the SDGs within a circular economy. All students implemented the majority of 9R framework (R0-R9) in daily life, but many students do not apply the Recover principle due to a lack of knowledge and skills, and because it is not relevant to their routines, as they do not see it as urgencies. The challenges faced were mainly related to creativity, skills, and additional costs for actions, but these were manageable through collaboration or external help. Overall, the students of Reguler 29, S2 Management, Telkom University, have developed green skills and practical experience, preparing them to contribute to green jobs in the future as a green talent

References

Akbar, Y. K., Maratis, J., Nawangsari, L. C., Putri, R. K., & SK, P. (2024). The effects of green human resource management practices on sustainable university thorugh green psychological climate of academic and non-academic staff. Cogent Business & Management.

Amudjie, J., Agyekum, K., & Adinyara, E. (2022). Awareness and practice of the principles of circular economy among built environment professionals. Emerald.

Ellen Macarthur Foundation. (2013). Towards the Circular Economy. Ellen Macarthur Foundation.

Farooq, K., Yusliza, M. Y., Wahyuningtias, R., ul Haque, A., Muhammad, Z., & Saputra, J. (2021). Exploring Challenges and Solutions in Performing Employee Ecological Behaviour for a Sustainable Workplace. Sustainability.

Fitria, S. E., & Yuliana, E. (2018). The Influence of Eco-Preneurship Dimensions towards Students' New Business at Telkom University in Indonesia. INTERNATIONAL

JOURNAL OF BUSINESS.

Hamid, M. Z., Hassan, Z., Nordin, M. S., Kamin, Y., Atan, N. A., & Suhairom, N. (2019). Generic Green Skills in Teaching and Learning: Meaning and Implementation. hrpub.org.

Kompas. (2024). Gen Z Makin Sulit Cari Kerja di Sektor Formal. Kompas.

Kompas.com. (2024, Maret 21). Aneka Tantangan Ekonomi Sirkular di Indonesia, Kurang Kolaborasi. Retrieved from Kompas.com: https://lestari.kompas.com/read/2024/03/21/070000986/aneka-tantangan-ekonomi-sirkular-di-indonesia-kurang-kolaborasi.

Kusnandar, V. B. (2023, Januari 10). Jumlah Pengangguran Terbuka Berdasarkan Jenjang Pendidikan yang Ditamatkan (Agustus 2022). Retrieved from databoks: https://databoks.katadata.co.id/datapublish/2023/01/10/ada-673-ribu-pengangguran-lulusan-universitas-pada-agustus-2022

Linkedin. (2023). Global Green Skills Report 2023. Retrieved from economicgraph.linkedin.com: https://economicgraph.linkedin.com/research/global-green-skills-report

Lubis, R. L., & Ghina, A. (2020). ARE THEY PROGRESSING TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS (SDGS) 2030? Case Study of "Green Leaders Ecocamp" and "Tel-U Ecoheroes" in Bandung City, Indonesia . Academic Journal of Science.

Medcom.id. (2023, Desember 20). Bappenas Haqqul Yaqin Ekonomi Sirkular Bisa Mewujudkan Indonesia Emas 2045. Retrieved from medcom.id: https://www.medcom.id/ekonomi/makro/PNga5d0k-bappenas-haqqul-yaqin-ekonomi-sirkular-bisa-mewujudkan-indonesia-emas-2045#google_vignette

Organisasi Perburuhan Internasional. (2024, Mei 8). Pekerjaan yang Layak dan Ramah Lingkungan (Green Jobs) di Indonesia. Retrieved from www.ilo.org: https://www.ilo.org/media/336271/download

Perserikatan Bangsa-Bangsa Indonesia. (2024, Maret 27). Apa Itu Perubahan Iklim? Retrieved from Indonesia.un.org/id: https://indonesia.un.org/id/172909-apa-itu-perubahan-iklim

Qu, D., Shevcenko, T., & Yan, X. (2020). University Curiculumm Education Activities Towards Circular Economy Implementation. International Journal of Scientific & Technology Research.

Ramli, R. R., & Ika, A. (2024, Maret 19). Ini Jenis "Green Jobs" yang Paling Banyak Dicari Perusahaan Versi Prakerja. Retrieved from money.kompas.com: https://money.kompas.com/read/2024/03/19/170000826/ini-jenis-green-jobs-yang-paling-banyak-dicari-perusahaan-versi-prakerja

Renfors, S.-M. (2024). Education for the circular economy in higher education: an overview of the current state. Emerald.

sdgs.bappenas.go.id. (2024, 6 1). Pendidikan Berkualitas. Retrieved from sdgs.bappenas.go.id: https://sdgs.bappenas.go.id/17-goals/goal-4/

Sekaran, U., & Bouige, R. (2017). Metode Penelitian Untuk Bisnis. Jakarta: Salemba Empat.

[20] Song, M., & Xie, Q. (2019). How does green talent influence China's economic growth? International Journal of Management.

Sugiyono. (2017). Metode Penelitian Bisnis Pendekatan Kuantitatif, Kualitatif, Kombinasi dan R&D. Bandung: Alfabeta.

Sugiyono. (2018). Metode Penelitian Kombinasi (Mixed Methods). Bandung: Alfabeta.

Tempo.co. (2022, Januari 9). Bappenas Prediksi Kerugian Akibat Perubahan Iklim Rp 544 T, Begini Rinciannya. Retrieved from bisnis.tempo.co: https://bisnis.tempo.co/read/1548123/bappenas-prediksi-kerugian-akibat-

perubahan-iklim-rp-544-t-begini-rinciannya

UNDP-Bappenas. (2022, Agustus 18). "The Future is Circular" UNDP-BAPPENAS. Retrieved from undp.org: https://www.undp.org/indonesia/publications/future-circular-undp-bappenas

Vecchio, P. D., & Secundo, G. (n.d.). Sustainable Entrepreneurship Education for Circular Economy: Emerging Perspectives in Europe. Interational Journal of Entrepreneurial Behavior & Reserach.