

Exploring the development of change agents for sustainability: outcomes of the Listen, Live and Learn initiative at Stellenbosch University

Listen, Live
and Learn
initiative

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Received 28 January 2022
Revised 18 June 2022
24 August 2022
6 October 2022
Accepted 7 October 2022

Zamokuhle Vanessa Langa

Food Security Initiative, Faculty of AgriSciences, Stellenbosch University, Stellenbosch, South Africa

Sandra Boatemaa Kushitor

Food Security Initiative, Faculty of AgriSciences, Stellenbosch University, Stellenbosch, South Africa and Centre for Sustainability Transitions, Stellenbosch University, Stellenbosch, South Africa

Nelene Koen

Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa, and

Julia Harper

Food Security Initiative, Faculty of AgriSciences, Stellenbosch University, Stellenbosch, South Africa

Abstract

Purpose – Among the various pro-sustainability strategies that universities adopt, Stellenbosch University's 2030 Agenda further challenges universities to provide sustainability education that enables students to become change agents for sustainability. The Listen, Live and Learn (LLL) initiative is a co-curricular programme developed at Stellenbosch University, South Africa, that seeks to foster social cohesion and develop change agency among students. This study aims to understand how LLL students had developed agency for change through their experiential learning in the programme.

Design/methodology/approach – Using a transformative sustainability learning approach, this study examined secondary data containing qualitative and quantitative data from the 2018 LLL end-of-year survey. The qualitative data was analysed thematically, and the quantitative data was analysed using counts and frequencies.

Findings – Through their participation in the programme, the students learned about their character and opened up to engage with the 'others' whom they lived with in the same residence. They also reported

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Ethical clearance: Ethical clearance to conduct the research was obtained from the Research Ethics Committee at SU (reference number IRPSD-913).



becoming more open-minded, intentional, reflective and confident. Another personal change reported by the students was their ability to collaborate with their housemates. The learners recommended that the programme could be improved by providing resources for house projects, guidance with inviting house theme experts and help with conflict resolution.

Originality/value – Through this research, the authors have demonstrated the ability of a transformative sustainability learning programme to effect a change in the attitudes, norms and behaviours of students at a higher educational institution towards a sustainable and just society.

Keywords South Africa, Education for sustainable development, Transformative sustainability learning, Live, Listen, Learn, Sustainability change agents

Paper type Research paper

1. Introduction

Fulfilling the needs of the current global population within planetary boundaries has become a complex challenge for different sectors of society, including universities. Sustainability is a growing concern in universities across the globe. Universities are usually large with an increasing population and have an array of campus activities and operations that significantly negatively impact the environment (Alshuwaikhat and Abubakar, 2008). Among the various pro-sustainability strategies that universities have already adopted to mitigate these effects, multiple policies further challenge universities to provide sustainability education and learning approaches that produce young professionals capable of being change agents for sustainability (Lotz-Sisitka *et al.*, 2015b; Mula and Tilbury, 2009; Olvitt and Lotz-Sisitka, 2018). People with interdisciplinary and transformative competencies possess the ability to integrate sustainability into all aspects of their lives (Lotz-Sisitka and Raven, 2009; Mason, 2011).

In 2002, the United Nations (UN) General Assembly declared the period 2005–2014 as the United Nations Decade of Education for Sustainable Development (DESD) (UNESCO, 2007). This declaration emphasised the pivotal role of education in achieving the Sustainable Development Goals (SDGs) (Acosta Castellanos and Queiruga-Dios, 2022). Through formal and nonformal education portals, the DESD aims to integrate sustainable development values, activities and principles into training and learning to facilitate change in socio-economic and environmental norms, attitudes and behaviours (UNESCO, 2007).

The UN Education for Sustainable Development (ESD) model was applied to the DESD. ESD is a learning model that prepares learners to cope with and find solutions to sustainability challenges (Acosta Castellanos and Queiruga-Dios, 2022). The model uses pedagogical techniques that promote participatory learning and higher-order thinking skills to encourage culturally specific change in economics, society and the environment. ESD emphasises a holistic approach to education. Transformative sustainability education (TSE) is among the pedagogies used for ESD (Azuma *et al.*, 2010; Diaz-Ruiz *et al.*, 2018; Sipos *et al.*, 2008). TSE targets behavioural change among consumers through a holistic, interdisciplinary, experiential and value-based learning approach (Feagan, 2018). TSE approaches are meant to bridge the mental gap between the possession of sustainability knowledge and the display of pro-sustainability behaviours by:

- invoking the learners' emotions and self-awareness to drive deep learning;
- communicating the interconnectedness of the sustainability challenge and facilitating the learners' understanding of their contribution to the challenge; and
- providing opportunities for the learners to put to practice what they have learned (Tillmanns, 2020).

Over the past 15 years, universities have aimed to develop sustainability competencies amongst students and staff using the ESD approach (Scherak and Rieckmann, 2020). In a review of studies on this subject in 2020, 28 were reported from Europe, while only 2 were reported from Africa (Acosta Castellanos and Queiruga-Dios, 2022). In 2004, the Mainstreaming Environment and Sustainability in African Universities Partnership was formed to strengthen capacity development, training and networking using ESD methods. Ninety African universities have signed up for this partnership (Lotz-Sisitka *et al.*, 2015a; Pradhan *et al.*, 2015).

In South Africa, the Constitution and the Department of Education have mandated ESD at higher education institutions to promote an inclusive and just society (Teise and Roux, 2016). The goal is to address years of inequality created through the apartheid system. Several educational institutions have developed ESD programmes to build a nation free from race, gender and other forms of discrimination to promote environmental, social and economic change (Dzerefos and Dzerefos, 2020). Each institution is at liberty to design the programme to meet the unique needs of that institution. For example, at Rhodes University, an ESD programme has been designed as an international professional development training programme (Durr, 2021).

Stellenbosch University (SU) is an institution of higher education in South Africa. Historically, SU was a racially exclusive university for white students due to its strong association with the apartheid system. In 2018, a third of the student population was white (Stellenbosch University, 2018). As a result of its history, the university has developed several initiatives to diversify its student population (Smorenburg and Dunn, 2014). The Listen, Live and Learn (LLL) initiative is one such programme. The LLL initiative is a flagship senior student residence programme designed to minimise student stereotyping and discrimination (Dunn-Coetzee and Fourie-Malherbe, 2021; Stellenbosch University, 2013). The initiative also mainstreams sustainability learning and consciousness into its programming through “themed” houses. The theme of each house is selected based on the 17 SDGs (Table 1). For example, the food security house is linked with SDG2, which hopes to end hunger for all.

This study aimed to understand how students had developed agency through their experiential learning in the LLL programme. The study was guided by three research objectives: to determine how the LLL initiative students had engaged and interacted in their respective houses; to determine what the LLL initiative students had learned in terms of the three competencies that the initiative seeks to develop, namely, self-awareness, enquiring mind and agency development; and to determine what the LLL initiative students thought could be done to improve their experience in the programme in the future. The findings were thematised using Azuma *et al.*'s (2010) theoretical framework on strategic guidelines for the design of TSE approaches. The findings contribute to a pool of knowledge on efforts to change behaviour for sustainability at universities and societies (Acosta Castellanos and Queiruga-Dios, 2022; Gianluca and Curtis, 2021; Lotz-Sisitka *et al.*, 2015a).

1.1 The Listen, Live and Learn initiative

The LLL initiative is a flagship senior student residence programme at SU with a co-curricular programme that seeks to foster social cohesion and develop change agency among its participants. It was designed as an avenue for challenging attitudes, influencing behaviours and developing relevant skills to enable learners to act and bring about positive change for sustainability. It provides an immersive experiential learning opportunity for students to live with, listen to and learn from the “other” (LLL, 2016). Based on the intergroup contact theory eight students from different genders, races and socio-economic

Table 1.
The link between the Listen, Live and Learn house themes and the sustainable development goals (SDGs), and the number of participants who took part in the 2018 reflections survey from each house

LLL house theme	Related SDG goal(s)	No. of participants in 2018
Food security	SDG1; SDG2; SDG12; SDG13	3
Nature conservation	SDG7; SDG13	6
Water and waste management	SDG6; SDG15; SDG14	3
Leadership	SDG17	7
Governance and accountability	SDG17	4
Education	SDG 4	4
Social entrepreneurship	SDG8	2
Peace building and conflict transformation	SDG16	3
Ontological design	SDG 4	6
Human rights house	SDG10; SDG11	1
Multilingualism	SDG 4	1
Human diaspora	SDG 3; SDG9	2
Social media	SDG9; SDG3	2
Innovation	SDG8; SDG9	2
Human diaspora	SDG5; SDG10	4
Identity and belonging	SDG5; SDG10	1
Social justice- conflict resolution and transformation	SDG16	1
Religion and spirituality	SDG16	1
Total		53

backgrounds (the intergroup) are placed in one of the 28 LLL-themed houses where they share a common kitchen and bathrooms. The house themes were developed based on the SDGs (Table 1). For example, the food security house is linked with SDG2, zero hunger. This theme is significant in South Africa where high levels of food insecurity have been reported at the household level and among university students (Van den Berg and Raubenheimer, 2015).

Students living in the same house must work towards two common goals. The first goal is to invite knowledgeable guests to engage in conversations related to the theme of the house. The second goal is to complete a house project that brings awareness of some of the challenges related to the house theme. The house theme-related conversations are the initiative's focal point for two reasons. Firstly, they foster social cohesion by encouraging regular, intentional contact and engagement with the "other" to reduce stereotypes, biases and discriminatory attitudes (Dunn-Coetzee and Fourie-Malherbe, 2021). Social cohesion is especially crucial at SU, a historically white institution with an exclusionary past that is now striving to ensure equitable representation of previously underserved groups in South Africa. Secondly, the house theme-related conversations are meant to foster change agency among the students by providing a space where the knowledgeable guests (i.e. theme experts) and students challenge each other's worldviews and mental models. These meetings are devoted to issues of importance, many of which form part of the SDGs, to awaken students to their leadership potential. As change agents, the students are encouraged to innovate and find solutions that contribute positively to social and environmental change at SU and in South Africa through their themed house projects (Dunn-Coetzee and Fourie-Malherbe, 2021; Smorenburg and Dunn, 2014). The initiative envisages that after a year of residing in the LLL house, the participants would have developed competencies in three main areas: enquiring mind; self-awareness; and agency development.

1.2 Conceptual framework

This study used [Azuma *et al.*'s \(2010\)](#) theoretical framework on the strategic guidelines for the design of TSE ([Table 2](#)). The framework argues that change agents for sustainability need to be action-oriented as general knowledge or awareness of sustainability issues does not always lead to pro-sustainability behaviour, conduct or action ([Podger *et al.*, 2010](#)). [Azuma *et al.* \(2010\)](#) proposed three guidelines to include in programme design:

- (1) using the learner's 'self' as a primary instrument for learning;
- (2) integrating head, heart and hand to encourage learners to overcome mental barriers; and
- (3) cultivating a safe and fertile space for self-learning to unfold.

Guideline 1 recommends using the learner's "self" as a primary instrument for learning; this ensures that learners value the learning opportunities and take responsibility for initiative change. Guideline 2 recommends the integration of heart, head and hand to overcome mental barriers. The "heart" refers to an intuitive-emotional dimension where the individual has a sense of identity, self-awareness, connectedness (especially to their higher potential) and ownership of own life ([Sipos *et al.*, 2008](#)). The "head" or cognitive dimension refers to the learner's intellect. The individual has a holistic and interconnected worldview. Such individuals understand how society and the natural environment are related, including how they interact to become unsustainable. The 'hand' is the physical-action dimension. The individual is motivated to achieve their vision of a sustainable future, equipped with the necessary professional and leadership skills to effect change. Guideline 3 recommends that the programme provide an inclusive and nonjudgmental space where the participants can open their minds and hearts to connect with what matters to them. Applying these guidelines enhance the learning process by bridging the mental gap between knowledge and action by appealing to the heart, where the will and motivation to act for sustainability lie ([Azuma *et al.*, 2010](#)).

[Table 3](#) provides details on how the three guidelines were measured in this study. Guideline 1 was measured with questions about how the students had engaged with others and participated in programmes during their residence. As Guideline 2 refers to cognitive

The theoretical framework of the three strategic guidelines for the program design of TSE	What the three strategic guidelines TSE entails
<i>Guideline 1:</i> Using the learner's "self" as a primary instrument for learning	Driven by a vision of a better future for themselves and others Self-motivated Committed and have a sense of ownership and responsibility to own their learning process
<i>Guideline 2:</i> Integrating heart, head and hand for a holistic learning process that helps learners to overcome mental barriers	Head: Intellectual-cognitive- theory dimension Heart: Emotional-intuition-self dimension Hands: Physical-experiential-action dimension
<i>Guideline 3:</i> Cultivating a safe and fertile space for self-learning to unfold itself	Foster trust in participants' potential and will to learn Foster participation/collaboration/ peer learning Foster a non-judgemental, diverse and inclusive space Provide basic tools to facilitate learning

Source: Adapted from [Azuma *et al.* \(2010\)](#)

Table 2.
The theoretical framework of the three strategic guidelines for the program design of transformative sustainability education (TSE) approaches

Table 3.
Matrix of the theoretical framework and the study objectives as well as the survey questions used to establish the learning outcomes of the 2018 LLL students

Strategic guideline for TSE	Study objective	LLL 2018 final reflection survey questions used in this study	Data type and analysis
Using the learner's 'self' as a primary instrument for learning	To understand how the students in the LLL sustainability lot engage or interact in their respective houses	How many house dinners have you helped prepare? How many house dinners have you attended?	Quantitative (frequency of events reported) Quantitative (frequency of events reported)
Integrating heart, head, and hand for a holistic learning process that supports learners to overcome mental barriers	To examine what students in the LLL have learned about agency development, self-awareness and enquiring mind	How many dinner guests have your house hosted? (friends not included) How often does your house do a clearing (lounge theme conversations)? Do you initiate group activities for housemates? If yes, please list some of the activities Do you attend things your housemates invite you to? If no, please explain why What have you learned about an enquiring mind, and do you plan to use any of these skills after your time in the LLL Initiative? What have you learned about self-awareness, and do you plan to use any of these skills after your time in the LLL Initiative? What have you learned about agency development, and do you plan to use any of these skills after your time in the LLL Initiative?	Quantitative (frequency of events reported) Quantitative (frequency of events reported) Quantitative (measured with a Likert scale) Quantitative (measured as yes and no) Quantitative (measured as yes and no) Qualitative (thematic analysis) Qualitative (thematic analysis) Qualitative (thematic analysis)
Cultivating a safe and fertile space for self-learning to unfold itself	To examine what students in the LLL think can be done to improve their experience in the programme	In regard to the experiences with your housemates, what is working? What is not working? What have you learnt so far? And how can you, as a house, build on what is working?	Qualitative (thematic analysis) Qualitative (thematic analysis)

development, it was measured with participants' learning outcomes regarding self-awareness, agency development and an enquiring mind. Guideline 3 was measured with participants' recommendations for improving the LLL programme.

2. Methods and materials

2.1 Source of data and data analysis

The 2018 LLL end-of-year reflections data set was used for this study. At the end of each academic year, the LLL coordinators administer a questionnaire to students to assess their thoughts and opinions regarding their experiences in the LLL programme. The questionnaire contained qualitative and quantitative questions. The questionnaire was shared with all 115 students in the programme in 2018. However, only 53 answered, giving a response rate of 46%. The LLL coordinators provided permission to use the data set. For ethical reasons, the LLL coordinators did not provide the demographic characteristics and other identifying information of the participants.

Table 3 outlines the guidelines from the conceptual framework and how each data type was analysed. Frequency counts and percentages were used for the quantitative analysis. For example, to achieve the first study objective, namely determining how students had engaged and interacted in the LLL houses, the frequency of dinner preparations, dinner attendance, dinner guests hosted, clearing sessions and other activities was summarised to describe how the students had interacted with one another. The qualitative data was analysed using thematic analysis (Braun and Clarke, 2006). To ascertain what the students had learned in the programme, as per the second objective, three core learning outcomes, namely, an enquiring mind, self-awareness and agency development, were determined by coding their responses to these questions. The analysis focused on how the participants understood these concepts and how many perceived themselves to have acquired the skill and their thoughts on improving the programme.

3. Results

3.1 How students engaged and interacted in their respective houses to advance their growth and development in the Listen, Live and Learn initiative

Students are expected to participate at least twice in an academic year of approximately 10 months in LLL-related and LLL-unrelated activities. Most of the students indicated that they had participated in the house dinner preparations at least once, while a third (32.1%) had not participated in preparing communal house dinners (Table 4). In contrast, 24.5% of the participants had helped to prepare at least one meal, and 22.6% had helped to prepare more than two meals. When the participants were asked how many dinners they had attended, 24.5% indicated they had not participated in any, 18.9% had attended at least one house dinner and 47.2% had attended house dinners more than twice.

As seen in Table 4, one-fifth of the participants indicated that their house had hosted at least one dinner guest (20.8%), while 56.6% indicated that their house had not hosted dinner guests. Only six participants (11.3%) indicated that their house had hosted more than two dinner guests. This implies that in a 10-month academic year, during which the LLL participants were expected to engage with each other and the house theme experts at least ten times, only twice did the students officially engage in knowledge transfer conversations on their house themes with guests who were experts on the house themes.

A clearing session takes place when students living in the same themed house reflect on what is working for them and what is not, often to resolve conflicts within the house. As per Table 4, 39.6% of participants indicated that they had attended clearing sessions once a semester, 20.75% indicated their house had conducted clearing sessions whenever needed and

Table 4.
Frequency of
engagement among
housemates on LLL-
related activities and
LLL-unrelated
activities

Activity	No. of respondents	(%)
<i>Dinner preparation</i>		
None	17	32.1
Once	13	24.5
Twice	11	20.7
More than twice	12	22.6
<i>Dinner attendance</i>		
None	13	24.5
Once	10	18.9
Twice	5	9.4
More than twice	25	47.2
<i>Dinner guests hosted (theme experts)</i>		
None	30	56.6
Once	11	20.8
Twice	6	11.3
More than twice	6	11.3
<i>Frequency of clearing sessions</i>		
Never	14	26.4
Once a semester	21	39.6
Once a term	1	1.9
Once a month	4	7.5
Ad hoc	11	20.7
I don't understand clearing	2	3.8
<i>Frequency of engagement among housemates on LLL-unrelated activities</i>		
Do you attend things your housemates invite you to?		
Yes	36	67.9
No	7	13.2
Yes, but only when I can	7	13.2
Never been invited	3	5.7
Do you initiate group activities for housemates?		
Yes	31	58.5
No	22	41.5

26.41% stated that they had never attended a clearing session. Most participants thought of clearing sessions as an opportunity to resolve conflicts instead of a chance to reflect, learn and grow. Therefore, clearing sessions were initiated when resolving of a conflict was required.

The majority of the respondents (67.92%) indicated that they had attended activities that their housemates had invited them to, and a further 13.20% stated that they had attended only when they could. Furthermore, when asked whether they had initiated activities with their housemates, most respondents (58%) indicated that they had. The activities included:

- personal activities whereby they studied together and went on ice cream adventures;
- social activities whereby the individuals participated in a Kayamandi (a socially disadvantaged township in Stellenbosch) project and attended a children's foundation event; and
- physical activities whereby they went hiking.

3.2 Students' learning outcomes: enquiring mind, self-awareness and agency development

The LLL programme envisaged developing competencies in three main areas: self-awareness, enquiring mind and agency development. Through the programme, students

learned things about themselves and others by living in houses with people from different backgrounds. Their learning included being open-minded and intentional under the enquiring mind competency being reflective and confident under the self-awareness competency, and independent thinking, self-efficacy and collaborating with others under the agency development competency.

3.2.1 Enquiring mind. According to the LLL initiative, having an enquiring mind involves being a problem solver, being intellectually curious and adopting a systems thinking approach when solving issues related to the sustainability challenge. Respondents indicated that they had learned that an enquiring mind had to do with being open-minded, whereby individuals are willing to challenge constructs about self, others and the world ($n = 12$). For example, one respondent reported that their willingness to have meaningful conversations with new and different people had led to new friendships. At the same time, another said that they had acquired new disciplinary knowledge.

I have learned to have a more meaningful conversation this year, and have made friends I least suspected, who possess completely different views than my own. (R1, Food Security House)

I have learned more about other disciplines. (R11, Nature Conservation House)

About one-fifth ($n = 12$) indicated that they had come to understand the importance of having an inquiring mind. The respondents generally indicated that an enquiring mind had opened them up to finding life lessons in everyday living and learning to accept the differences in people.

When actively engaging- possessing an inquiring mind, you can learn so much in an average day than simply living without being intentional in conversations. (R1, Food Security)

I have learned that the answers to the question we didn't even know we had, are everywhere around us. (R45, Nature Conservation House)

Respondents also indicated that having an enquiring mind had to do with being intentional ($n = 10$), being a lifelong learner ($n = 11$), being tolerant ($n = 3$) and understanding the importance or value of having an enquiring mind ($n = 11$). A number of respondents indicated that they had learned nothing about an enquiring mind during their time in the LLL programme ($n = 6$).

3.2.2 Self-awareness. As per the LLL initiative, a self-aware or well-rounded individual mainly has good interpersonal and intrapersonal skills. Some respondents indicated that they had learned that self-awareness involved being thoughtful and reflective ($n = 15$). For example, one respondent indicated that learning about self-awareness had enabled them to be mindful of their actions and the possible implications of those actions for other people.

I have learned to be more aware of my speech and the effect it can have on others in terms of ambiguity and subsequent offence." R1, Food Security) "With regards to self-awareness, I am conscious about the impact I make on the people I meet, and I have learned a lot about myself through living with different people." (R38, Mental Health and Wellness House)

Other participants indicated that self-awareness was about being open to seeing developmental areas and accepting oneself ($n = 17$). For example, one respondent noted that their development area involved changing their self-perception to see a more realistic image of who they were.

I have learned that sometimes I need to change how I approach looking at myself to gain a grasp of a bigger picture of who I am." (R41, Nature Conservation House)

"I have learned to be aware of my weaknesses and use my awareness of them to my advantage. I plan to continue to develop this skill and do this in future." (R25, Identity and Belonging House)

Additionally, respondents indicated that trusting oneself ($n = 5$), understanding the importance of self-awareness ($n = 8$) and understanding that it is an intentional and a continuous process ($n = 9$) were what they had learned about self-awareness. Three participants indicated that they had not learned anything about self-awareness during their time in the LLL programme.

3.2.3 Agency development. The LLL initiative states that agency development involves (among other things) social engagement, social entrepreneurship and being an active participant. However, the respondents indicated that they had learned that agency development had to do with thinking independently ($n = 10$), connecting and collaborating with others ($n = 9$), realising that anyone had the power and choice to make a difference ($n = 3$), and finding creative solutions and access to resources ($n = 3$), as well as that it is a continuous and evolving process ($n = 4$). The findings also show that almost half of the respondents did not learn anything about agency development during their experience in the programme ($n = 23$).

You don't need a position to be an agent of change, and I think this one thing that can assist a lot of non-positional leaders. (R21, Ethical Leadership House)

I have learned that connecting with people in various fields and backgrounds is important. After graduating from university, networking and the people you network with become an important key to finding your way about. I plan to use this skill to my advantage. (R3, Water and Waste Management House)

3.3 What students thought could be done to improve their Listen, Live and Learn experience in the future

When the respondents were asked what had worked and had not worked for them while living with other people at the LLL, they indicated that having a sense of mutual respect had worked well, even though they had not been well acquainted with each other (49.05%) (Table 5). Some participants noted the lack of general house integration, whereby housemates could not do things together or convene regularly. Furthermore, some respondents indicated that communication (13.2%) and a supportive environment (13.2%) had worked for them. In comparison, 24.52% of the respondents indicated that lack of conflict management (regarding dirty dishes, difference in opinions and disrespect) had not worked for them. They also suggested that the coordinators of the programme could improve the LLL experience by formalising and providing in-depth information about the house themes, setting strict rules for accountability and compliance and providing guidance in terms of inviting house dinner guests.

Although 58% of the respondents indicated that they had no constructive criticism to share with the LLL initiative coordinators, some suggested that better planning and management (15.09%) were necessary. The students asked the LLL coordinators to prepare shorter self-assessments, formalise and provide in-depth information on the LLL themes, set strict rules for accountability and compliance and help with the invitation of house dinner guests. Furthermore, 13.2% of the respondents also indicated that more support in the form of frequent house visits to motivate the community, help with resources for the house theme projects, and help with conflict management and mediation were needed. Lastly, some respondents (13.2%) also indicated that the LLL coordinators needed to improve their communication with the community. The respondents noted that the LLL coordinators

Table 5.

Things that worked
and did not work for
the LLL participants
while living with
their housemates

Variable	No. of respondents	(%)
<i>What's working</i>		
Mutual respect	26	49.1
Supportive environment	7	13.2
Communication	7	13.2
Did not answer question	13	24.5
<i>What's not working</i>		
Planning and accountability	5	9.4
Conflict management	13	24.5
General house integration	8	15.1
Did not answer question	22	41.5
<i>Constructive criticism/ thoughts of the LLL</i>		
None	31	58
Better planning and management	8	15.1
More support	7	13.2
Better communication	7	13.2

should communicate the self-assessments timeously and give the participants enough time to complete them. Others also pointed out that the expectations of participating in the programme should be better communicated.

4. Discussion

The UN declaration of 2005–2014 as the DESD emphasised the pivotal role of education in achieving the SDGs through the development of change agents. This study examined the development of change agents through the LLL residential programme at SU in South Africa. [Azuma et al.'s \(2010\)](#) theoretical framework for designing TSE programmes guided this study. Although the overall engagement of students in LLL activities was low, there were some meaningful interactions. Through these interactions, a number of students acquired knowledge and developed skills regarding an enquiring mind, self-awareness and agency development. However, some students were unable to develop these skills. The participants also provided recommendations for improving the programme implementation.

The findings revealed that the participants had not had regular engagements through the LLL-related activities. In a 10-month academic year, the LLL participants are expected to engage with each other and the house theme experts at least ten times. The low level of engagement could be explained by the reality that students' presence in the LLL programme could have been circumstantial and not voluntary. The participants might have needed student housing and did not necessarily have a strong interest in engaging with and contributing to the LLL community. This need for housing could have been more important than the "readiness for change", which serves as a motivation for engagement ([Hole et al., 2016](#)). Nevertheless, on the few occasions that these engagements happened, the students participated in social interventions for a disadvantaged community. Such arrangements can open students to new experiences, narratives and realities of the world around them ([Roysen and Cruz, 2020](#)).

The learning outcomes in terms of an enquiring mind, self-awareness and agency development were designed to help the students to overcome their mental barriers toward pro-sustainability behaviours. Developing competencies in these three areas challenges the learners' mental constructs of "self" and how the world works ([Azuma et al., 2010](#)). About half of the students reported that they had developed these skills. This can be credited to

how the programme is carefully designed to involve the whole person (Dunn-Coetzee and Fourie-Malherbe, 2021). It must be noted that developing these skills takes time and exposure to different settings, people and environments (Shriberg and Harris, 2012). Such skills can be acquired through tools such as workshops, training, programme guidebooks and facilitators to objectively integrate and monitor the development of these competencies (Podger *et al.*, 2010; Roysen and Cruz, 2020).

Regarding recommendations to improve the programme, the participants believed that more could have been done to enhance the environment to make it better suited to learning. The participants indicated that support in terms of frequent house visits from the coordinators to motivate the community, help with conflict resolution and help with resources for their house theme projects were some aids that the LLL coordinators could provide to improve learning outcomes. These recommendations concur with other studies using TSE approaches (Sipos *et al.*, 2008).

5. Conclusions

The LLL initiative is an avenue for challenging attitudes, influencing behaviours and developing relevant skills for pro-sustainability behaviours. Through the programme, students gained valuable lessons about sustainability and social change. Therefore, it constitutes a very effective TSE avenue that can be leveraged to fulfil the aim of integrating sustainability education at SU, other African universities and globally. However, the student levels of dedication to and ownership of the learning process were low.

Based on the findings of this study, we recommend key lessons for higher education institutions in the design and implementation of such programmes. In terms of programme management, specific time and attention must be devoted to implementation to harness the development of change agents expected among the participants. For example, TSE programme coordinators can create timelines and set responsibilities and milestones for each participant to encourage engagement among the learners (Shriberg and Harris, 2012). In addition, before admission into such programmes, participants can be provided with an adequate understanding of the programme objectives, expectations and incentives. Furthermore, tools such as workshops, facilitators, programme guidebooks and support with real-life projects should be provided (Hole *et al.*, 2016; Tillmanns, 2020).

Future studies on the LLL initiative can contribute towards developing a practical framework for establishing similar co-curricular programmes that can be adopted and adapted by different residences at SU as well as across other universities. Finally, a comprehensive study with a mixed-method approach needs to be conducted to evaluate the programme design and its effectiveness in achieving its outcomes. Such a study can interview current and past students of the programme to examine how they have integrated sustainable development values, activities and principles into norms, attitudes and behaviours.

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About the authors

Zamokuhle Vanessa Langa is currently working in the food industry as a Food Scientist. She is also engaged in a project called the Wellness Guide which seeks to inspire and motivate young people to cultivate healthy eating habits. Her research interests are in rural development, food and nutrition security, sustainability education and behaviour change.

Nelene Koen is a registered dietitian and currently works at the Division of Human Nutrition, Stellenbosch University. Her research focuses on the following two areas of public health nutrition: population-wide interventions combatting non-communicable diseases (food and nutrition labelling and legislation; health promotion levy; salt reduction strategies) and consumer food purchasing behaviour.

Julia has been the manager of the University of Stellenbosch cross-faculty and multidisciplinary projects on food systems for 13 years. She has been pivotal in developing and implementing the MSc programmes in Food and Nutrition Security and Sustainable Agriculture. She brings together new projects and programmes working towards the broader goal of developing cutting-edge research in sustainable food systems. She is also active in the Stellenbosch food platform, a board member of the Southern Africa Food Lab and the Western Cape food security task team.

Sandra Boatemaa Kushitor has academic training in sociology, psychology and population studies. In her research, she draws on theoretical and methodological perspectives from the social sciences to understand population health dynamics. Currently, her research focuses on three distinct, yet related areas of population health: population shifts (disease patterns and mortality, urbanisation, dynamics of family change); public health nutrition (nutrition-related non-communicable diseases, foodways, the nexus between food environment and health); and governance (food systems and health systems governance). Her work has influenced food system innovations in the Western Cape through Transformation-labs and policy dialogues with public officials at the office of the Presidency and the office of the Premier of the Western Cape government. She is currently based at the Department of Community Health, Ensign Global College, Kpong, Ghana. Sandra Boatemaa Kushitor is the corresponding author and can be contacted at: boatemaa@sun.ac.za

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