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Perception towards sustainable development concept: Egyptian students' perspective

Perception
towards
SD concept

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Abstract

Purpose – The aim of this paper is to measure students' perception towards sustainable development (SD) concept. The paper highlights students' perception before and after joining Heliopolis University (HU). Also, the research underscores different activities, facilities and methods HU is implementing to sharpen the delivery of SD concept. Furthermore, the study emphasizes on the extent to which students are anticipating implementing SD concept in their life.

Design/methodology/approach – The research paper is an exploratory qualitative research design. The sample frame was the database of HU. A non-probability convenient sampling approach was applied to select 26 elements of the study. In-depth personal interviews were conducted. Questions were coded to facilitate analysis and to link respondents' answers with different questions. Accordingly, 12 structured open-ended questions were designed to gain clear insights regarding students' awareness of SD. Personal interviews took place at the end of fall semester 2012.

Findings – Students' responses were classified into observations and realization, needs and suggestions, and future plans. All students confirmed interest to apply SD in their lives.

Research limitations/implications – This research is limited only to HU students, which is considered a limitation of the research findings. Another limitation is that the study is an exploratory qualitative research, which could be enhanced if a conclusive design is applied. However, both limitations are considered within the context of conducting future research. One is related to the expansion of the sample frame to include more diversified students, and the other to conduct a conclusive research for fine-tuning the results and recommendations.

Originality/value – The paper's value stems from measuring multi-disciplinary freshmen perception regarding SD concept at HU, which is the first non-for-profit university in Egypt and the Middle East declaring SD as its overall guiding principle and specialization. Moreover, the paper provides insights on SD concept from a developing country perspective.

Keywords Education, Sustainable development, Universities, Egypt, Students' perception

Paper type Research paper



Introduction

Sustainable development (SD) has emerged as the new paradigm of development to help the world overcoming current and future environmental and social challenges, among which are climate change, energy resources, and water scarcity

(Salem and Harb, 2012). SD is considered one of the biggest challenges of the twenty-first century, as well as an absolute necessity for the survival of our planet (White and Whitney, 1990). The World Commission on Environment and Development (1987) defined SD as the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Accordingly, four main aspects of SD were materialized: economic, environmental, social, and culture. Kemp *et al.* (2005) and Munier (2005) highlighted the significance of understanding the inter-relations and interdependence among all four aspects to better comprehend SD (Schmandt and Ward, 2000). The definition of SD was in consensus with the aforementioned one, whereas Weenen (2000) summed up SD with these four terms “limits, interdependence, fundamentals, and equity,” which add up to “LIFE.” However, Simonneaux (2007) perceived SD as an ideology – a way of life – and a way of thinking. Yet, Leal Filho (2000) stressed that there is a tendency towards perceiving SD as an abstract concept, since it is not classified as a stand-alone science. Accordingly, it is often treated as too wide and theoretical without sufficient scientific background. SD was also accused of being a fashionable word (Kliucininkas, 2001). Clearly, the meaning and perception of SD differs according to cultures and countries. Views about SD varies between impossible to achieve and to the extent that it is LIFE. SD can be viewed from an abstract view as well. A broad and holistic thinking approach is required to better understand the concept of SD.

Education has a significant role to play in personal and social development (Delores, 1996). Despite the fact that universally many universities are considering integrating “education for sustainable development (ESD)” into their core activities, e.g. teaching and research (Martin *et al.*, 2006; Weenen, 2000), ESD is neither advancing rapidly nor representing a high priority – particularly in a developing country like Egypt. ESD is both a challenge and an opportunity. It is a challenge to promote ESD due to the limited developed materials and resources especially dedicated for SD in Egypt as well as in other developing countries. Neither parents nor students currently understand the real value of ESD. Nevertheless, the gains and opportunities are likely to offset the expected difficulties. From a positive angle, different reputable organizations are endorsing ESD. Eventually this positive global outlook could generate progressive public support and awareness. Currently, Egypt is facing a critical political and economic challenges. Society is suffering polarization, serious decrease of foreign currency reserve, and strategic threats for national security (State Information Service, 2013). ESD could be a long-term solution for Egypt’s challenges. Awareness for SD is important to bring religions, cultures, and democratic practices.

This paper aims at measuring Heliopolis University (HU) students’ perceptions towards the ESD concept. It is worth noting that HU is a newly established university with a very limited number of students. HU is the first not-for-profit university in Egypt and the Middle East declaring SD as its overall guiding principle and specialization.

Education for sustainable development

The importance of ESD stems from the United Nations Decade for ESD (2005-2014), where UNESCO (2007) stressed that education had the potential to play a major role in the future realization of a “vision of sustainability that links economic well-being with respect for cultural diversity, the Earth and its resources” (Little and Green, 2009, p. 171). Achieving sustainability will ultimately depend on changes in behavior

as well as lifestyles (Kuhtz, 2007). To achieve a desired behavior and/or to modify an existing one, people's attitude can change through education (Nita and Agheorghiesei, 2010). Yet, Arbuthnott (2009) argued that ESD should go beyond attitude and include social norms and habitual behavior.

Moreover, UNESCO (2004, p. 20) formulated in its "draft international implementation scheme" about the ESD World Decade:

ESD requires a re-examination of educational policy [...] in order to focus clearly on the development of the knowledge, skills, perspectives and values related to sustainability. This [...] requires a review of recommended and mandated approaches to teaching, learning and assessment so that lifelong learning skills are fostered. These include skills for creative and critical thinking, oral and written communication, collaboration and cooperation, conflict management, decision-making, problem-solving and planning, using appropriate ICTs, and practical citizenship.

ESD provides people with knowledge, skills, and abilities that ease their understanding of the mutual interaction of the different SD concepts. ESD assists in developing people's orientation towards SD (Nita and Agheorghiesei, 2010). As opposed to traditional education that focuses on acquiring and generating knowledge, ESD aims at enabling people to stop and think before beginning a task, behaving in a certain way or making a decision, becoming reflective in evaluating their options (Barth *et al.*, 2007). Furthermore, there is consensus among researchers that ESD needs to develop and enhance individuals' capacity building to confront change and transformation (Cantell, 2006; Landorf *et al.*, 2008; Sterling, 2001). Clearly, education will play a fundamental role in bringing about change and achieving SD (Kuhtz, 2007; Mochizuki and Fadeeva, 2010).

Research on university students' perceptions of SD

There is a lack of literature regarding what students really know about sustainability and how they perceive SD (Carew and Mitchell, 2002; Kagawa, 2007). Lourdel *et al.* (2007) used the cognitive map method to measure the students' perception of SD concept after attending training emphasizing the concept. The results underscored differences in students' perceptions before and after attending the training. Students were able to associate wide range of words and terms to SD as opposed to before training, hence reflecting the key role the training played in reshaping their perception regarding SD.

Azapagic *et al.* (2005) found that undergraduate engineering students thought that SD was important in spite of their limited knowledge about the concept. Moreover, students highlighted the importance of SD for the coming generations. Furthermore, the students were knowledgeable only with respect to the environmental aspects of SD as opposed to economic and social ones. Likewise, a research on Oxford university students revealed that almost 90 percent of the candidates acknowledged SD environmental issues, whereas 70 percent identified economic aspects, and only 50 percent recognized the social aspect (Summers *et al.*, 2004).

On the other hand, Stir's (2006) spotted the shallow knowledge of SD aspects (economic, social, and environmental) among Griffith University (Australia) students, who were enrolled in pre-service teacher education. In consensus with Stir's results, Darnton (2004) revealed the lack of awareness of SD concept among UK general public at less than 30 percent. Moreover, those who claimed to be aware of the concept could not even explain what SD is about. Obviously, there is no universal formula for ESD. In order to make

student learning more relevant to a specific context, it is vital to create a curriculum change process to include students' needs, aspirations, and concerns for sustainability. In a rapidly changing and uncertain world faced by sustainability-oriented challenges, higher education needs to play a significant role in helping students to become active, and responsible citizens.

Role of universities in supporting SD

The role of universities could be defined as to:

[...] educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future (Report and Declaration of The Presidents Conference, 1990; Clugston and Calder, 1999, p. 2).

However, universities – with their formal learning context that occurs within an organized and structured context and follows a particular structured design (Dam-Mieras, 2006; Danish Technology Institute and Technopolis Group, 2008) and informal learning, which is referred to as experiential learning, can be involved in SD in many ways beyond even education, e.g. to be used in research and community service (Edgerly-Rooks *et al.*, 1999; Weenen, 2000; Barth *et al.*, 2007).

Characterized by its unique academic freedom and multi-disciplinary researchers, who can develop innovative solutions to society's burning issues (Cortese, 2003), higher education represented in universities can certainly play the role of change agent which via efficient education can achieve the desired SD behavior (Wright, 2006). Consequently, reorienting universities to address SD is a must and not a choice. However, universities are still following the conventional learning methods, where they pursue particular structured design and graduates have specific traditional majors to choose from Barth *et al.* (2007). Therefore, universities are held accountable to encourage unconventional ways of thinking that lead to changes in mentality (Wals and Corcoran, 2006). Such transformation requires exerting time and effort in order to effectively integrate ESD in all universities' fields of study. In the newly transformed educational environment, instructors practice collaborative learning, where he/she is contributing to the classroom discussion, instead of using the cooperative style where the instructor has the upper hand over the learners and is the one that guides and directs the learning process (Cortese, 2003; Moore, 2005).

Segovia and Galang (2002) argued that for effective implementation of SD, universities should adopt a partnership strategy to ensure full commitment and community acceptance to localize SD. The university role would be to help define, evaluate, document, pilot, refine and promote the determinants to successfully operationalizing this model. If transformation in higher education will be accomplished, ESD will become an enabling tool to direct students' capabilities towards transforming society. Subsequently, universities have a major responsibility in preparing students of today who will become the leaders of tomorrow to influence society and institutions (Cortese, 2003; Svanstrom *et al.*, 2008; Simonneaux and Simonneaux, 2009).

Heliopolis University for Sustainable Development

Heliopolis University for Sustainable Development started offering its services fall 2012. It is the first not-for-profit university in Egypt and the Middle East declaring

SD as its overall guiding principle and specialization (Heliopolis University for Sustainable Development, 2013). It is a pioneering university model for universities of the twenty-first century, inspired by decades of experience in research, industry, and education of the Sekem initiative.

Sekem is a hieroglyphic word, which means vitality. It is an Egyptian company very well-known for its holistic self-sustained nature. Sekem is composed of diversified companies that represent a solid and integrated supply chain based on sustainability. Heliopolis University for Sustainable Development is introduced in the Egyptian market as part of Sekem group. HU's trans-disciplinary approach to education through teaching, research and practice develops the skills necessary to achieve the goals of SD. What differentiates it from other universities is its vision for SD through empowering students to creating new ideas that meet fertile ground for further research and teaching.

At HU, SD is perceived and applied as a combination of an inner spiritual aesthetic (humanistic) perspective, and an outer physical and social (scientific) perspective. These inner-humanistic and outer-scientific perspectives are the two sides of the "sustainability coin." All the university's programs are geared towards SD through this integrated humanistic and specialized curriculum. The humanistic core program is oriented towards the inner aspect of SD, through promoting tacit knowledge and intangible outcomes. The specialist disciplines are primarily focused on the outer aspect of "SD," through promoting explicit knowledge (science) and tangible outcomes (application) within a particular field. At HU, each combination of specialist-core studies is embedded in such an integrated way. At HU, both core and specialized academic programs were developed according to the four C's of SD:

- (1) engaging in context;
- (2) raising consciousness;
- (3) assimilating content; and
- (4) making a contribution (Heliopolis University for Sustainable Development, 2013).

Founded in 2012, HU welcomed 100 students for the first semester. In the second semester, another 38 students joined. The University started only with three faculties, which are the Faculty of Pharmacy and Drug Technology, Faculty of Engineering, and Faculty of Business and Economics. This paper was conducted during the first semester (Fall 2012) and therefore the selected sample for the qualitative analysis represents 26 percent of the total population. With more than 50 faculty and staff members, HU enjoys 1:2 staff to student ratio, which ensures ultimate care and consideration to the students' needs. During the first semester, students studied foundational courses for their specializations in addition to the core program, which included arts; introduction to SD, and ecology. During the core program students were engaged in hands-on activities, e.g. planting, projects, etc.

HU believes that humans are the main pillar for development and sustainability. HU cares for the whole person's welfare, aspirations, and education. This new university helps students to reach their full potential and design non-traditional solutions for the current global and local challenges. The university has a variety of programs and activities to develop the students' character, and leadership.

The programs are gradual and assist students to consider development on the individual, group/team, community, and global levels (Figure 1).

HU has created the student life and development (SLD) office to assist students to become aware of their uniqueness, community, and the world. Through interactive and student-lead activities and programs, students will practice leadership, community serving, career planning, and exchanges. During the first semester, students were encouraged to explore the university's vision, mission, learning approach, facilities, colleagues, teaching and staff members through a number of interactive activities that focused on building bonds of trust, sense of community, and ownership of learning. Students were welcomed to develop their code of conduct, continuously evaluate the university's services, and also contribute effectively to the continuous development of the university.

As an integral part of the core program, students were introduced to an interactive course on the introduction to SD. The course aimed for understanding what SD means and what it is generally about with the involvement of different experts from the field that can provide insights from their professions. The content of SD was framed in terms of societal, cultural, economic and ecological dimensions. The course followed active-learning techniques to expose students to interactive, effective and practical learning experiences. The students were given the task to prepare, in teams, a poster for promoting SD in Egypt. The course included the following content: why SD, applications of SD at the example of textile industry, green economy experiences, community building, cradle to cradle approach, and organic agriculture. In HU's botanical garden, students planted vegetables and plants over the duration of the course. The course was followed by a multi-disciplinary activity across the three faculties. In the second semester, all students were engaged in a project called "Water is Life" which students in teams developed research about water in Egypt and conducted a community awareness activity within their localities. No results related to the water project are documented since the project's scheduled conclusion was to be after this paper's development.

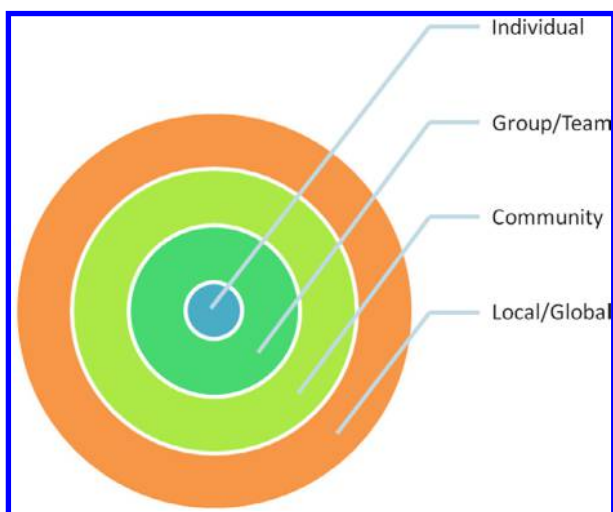


Figure 1.
HU model for youth
development

Through this unique design, HU contributes to the SD of society and also increases the employability and contribution of each student. In addition, HU has developed a number of local and international partnerships (Sekem, 2011). The International Association for Partnership (IAP) in ecology and trade (which was created to rethink north-south cooperation on the basis of dialogue) visited the university and met all of HU's students. The meeting included an interactive session about IAP's experiences in the area of SD in different parts of Europe and the world. In addition to the above mentioned activities students were engaged in accredited practicum exercises. HU made it very clear that coursework and experience are integrated for skill development. The rationale and methodology of the practicum exercise is to ensure that skills taught are applied in field experiences. This experience can give students a chance to utilize their skills in the "real world" and open up opportunities to learn about current issues and approaches in the field as well as to help shape the field by applying new SD ideas that link theory to practice.

Universities and higher education institutions, which are concerned about integration of ESD, have been continuously challenged to identify an effective learning model to adopt. Moore (2005) identified three models for ESD learning. The first model is cooperative learning model, which is a "structured process that requires learners to work together on a task, share information, and encourage and support each other" (Cranton, 1996, p. 26). The cooperative learning model is similar to the conventional learning where the instructor controls the learning context and direct learners to learning (Moore, 2005). The second learning model is the collaborative learning, where students are active learning agents and the educator is considered a member of the class and facilitator of learning without rigid authority as illustrated in the first model. The third learning model is the transformative learning, which assist learners to change their frames of reference. Educators who adopt the transformational learning model follows instructional methods with a focus on critical reflection. Through this approach, learners become critical thinkers and reflectors and are able to change the habits of mind and points of view (Moore, 2005). Although the transformative approach has its limitations (Wals and Corcoran, 2006) as learners become in conflict with their surroundings and are in continuous doubting process of the status quo, Heliopolis University for Sustainable Development has chosen to follow the transformational learning model. HU seeks to assist students to become agents of change, serve their communities, and transform their reality into innovative solutions for development.

Vare and Scott (2007) introduced two approaches to ESD that complement each other namely: ESD-1 and ESD-2. The first approach (ESD-1) aims at promoting a desired SD behavior and changing mentality regarding the SD concept. The second approach (ESD-2) considers building capacity and developing people's ability to think critically with respect to SD concept for improvements. HU follows the second approach (ESD-2). At HU, students are offered varied opportunities to identify and explore burning issues in the society or globally. Students are also encouraged to innovate and experiment non-traditional solutions in the university's safe environment. Students' capacity building is achieved through a diverse curriculum that considers knowledge, skills, and attitudes. HU offers a variety of extra curricula activities that both harness learning opportunities and conscious awareness. HU students are expected to become responsible citizens, who care for SD with a wider prospective.

Dam-Mieras (2006) and the Danish Technology Institute and Technopolis Group (2008) identified the ESD types of learning and context as the formal learning environment, non-formal learning, and informal learning. The formal learning (the educational system) is the learning that occurs within an organized and structured context (i.e. formal education institutions such as schools, colleges, vocational training institutes and universities), and follows a particular structured design. It typically leads to a formal recognition (diploma, certificate). In formal learning, issues of SD tend to be integrated in the curriculum of the institution. The non-formal learning is the embedded learning in the planned activities that are not explicitly designated as formal learning, e.g. on the job training. The informal learning is learning resulting from daily life activities related to family life, leisure time, visit to a museum, etc. This type of learning is referred to as experiential learning. The learning continues as a life-long process.

In HU, the three learning types are utilized. In the formal learning context, HU offers a number of courses that are directly related to ESD, e.g. introduction to SD, Ecology, etc. ESD courses are offered across the different disciplines under the non-formal context, HU has a variety of complementary interactive activities built in relation to the curriculum to ensure considering all learning styles and enriching the students' experience. Examples of the non-formal activities are summer training, internships, multidisciplinary projects, etc. For the informal learning, HU encourages students to get involved in non-academic and non-degree activities, e.g. field trips, sports, community service, etc. Through the informal learning, students gain authentic experiences, life skills, and a better understanding of the world outside the university premises. Informal learning helps the students to become prepared and competent for the job market. Barth *et al.* (2007) suggested that higher educational institutions can combine formal and informal learning settings to create a new learning culture, context, and competency development.

Under the direction of the Dean of Student Welfare, the SLD office was created to develop, promote, and direct campus events to ensure a balanced educational and social environment for students. The office provided support to students' lead programs, and collaborated with all members of faculties, student, and academic services management. The SLD office engaged proactively with academic program leaders, ensuring effective consultation and communication with respect to university's process and policy developments and providing specialist advice and guidance. The SLD assisted students to become aware of their uniqueness, community, and the world. Through interactive and student-lead activities and programs, students practiced leadership, community serving, career planning, and exchanges. Following is Figure 2 illustrating the different activities under each pillar of the SLD.

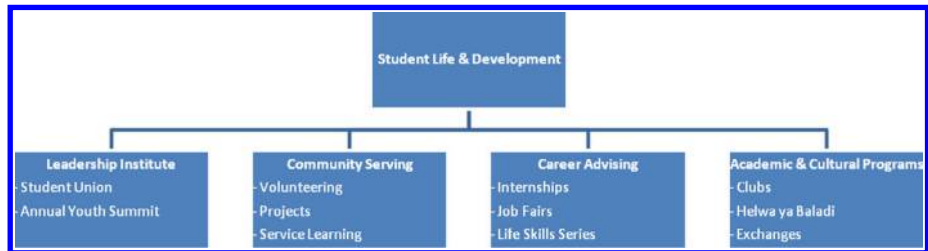


Figure 2.
HU student life
and development

Theoretical framework

This research has adopted the sustainability flower model (Sekem, 2011). The sustainability flower represents a management, assessment and communication tool symbolizing the concept of SD in its four dimensions (economic life, societal life, cultural life and ecology with its six sub dimensions). It was developed within a network of international organizations from the organic/biodynamic movement cooperating under the umbrella of the “IAP”. In the operations of the Sekem companies, the sustainability flower was applied fully in its three functions as management, assessment, and communication. In the “economic life” dimension, organizations should consider what kind of products it sells and in which way it distributes values along the value chain. In “societal life,” the protection and regulation of human rights is in the focus. “Cultural life” concentrates on the question of how to develop the individual. These three areas of society are surrounded by the six sub-dimensions of ecology “soil”, “plants”, “animals”, “energy”, “air”, and “water”; for understanding the positive and negative impact at the environment (Figure 3).

Research problem

The essence of SD may not be fully recognized by students enrolled in educational programs where this concept is very well embedded.

Component of the research problem:

- students’ basic or general awareness about ESD;
- students’ perception about ESD;
- the influence of specialized educational programs in creating SD awareness;
- the influence of SD brand association or character on creating SD understanding and awareness;
- students’ conviction about SD;
- the relationship between university engagement and practical activities and students perceptions towards SD;

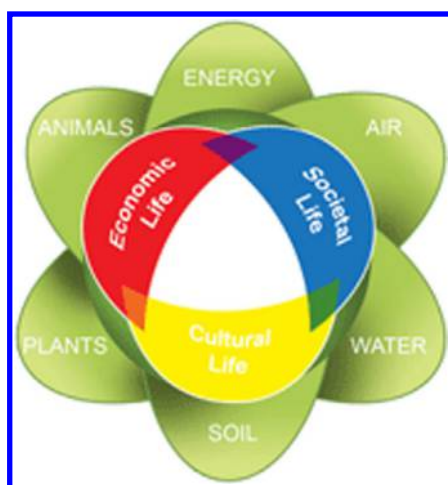


Figure 3.
Sekem sustainability
flower

- SD real life application by specialized university students;
- students understanding and conviction about SD and distributing positive word of mouth regarding this type of education; and
- the relationship between SD and students career paths.

Research questions

Major question

RQ1. What are the needed elements to boost ESD principles in higher education?

Minor questions

RQ2. How do students visualize SD context and associations?

RQ3. Does the availability of an internal supply chain model specialized in SD enhances students understanding of sustainability principles and themes?

RQ4. Is there any relationship between understanding SD concepts and raising students' appreciation level?

RQ5. Is there any relationship between SD early childhood awareness and the degree of acceptance and diffusion?

RQ6. What is the correlation between introducing ESD and living a green life?

Research limitations

This research is limited only to HU students, which is considered a limitation of the research findings. Another limitation is that the study is an exploratory qualitative research, which could be enhanced if a conclusive design is applied. However, both limitations are considered within the context of conducting future research. One is related to the expansion of the sample frame to include more diversified students, and the other to conduct a conclusive research for fine-tuning the results and recommendations.

Research methodology

To understand the students' perception towards SD, the researchers conducted an exploratory qualitative research design (Barth *et al.*, 2007). The sample frame was the database of Heliopolis University for Sustainable Development. The researchers managed to organize personal in depth interviews with 26 freshmen students. A non-probability convenient sampling approach was applied to select the 26 participants of the study (Denzin and Lincoln, 2000). The sample size represented 26 percent of the entire HU population which is sufficient for an accurate qualitative study. To begin encountering students, researchers used a protocol composed of questions derived from researchers' experience and based on the literature review themes. Then a special attention to interviewees was given to keep on expressing their thoughts to avoid influencing their opinion. All interviews were recorded which helped in documenting the detailed thoughts of each respondent. Questions were raised and recorded using Arabic language to avoid any ambiguity particularly since SD is a totally new lifestyle to the Egyptian community.

Questions were coded to facilitate analysis and to link respondents' answers with different questions (Creswell, 2009). Accordingly, 12 structured open ended questions

were designed to gain clear insights regarding students' awareness of SD as a new educational concept in Egypt. The entire questions were based on the research problem and its components. As a qualitative study without hypothesis therefore no possible answers for the research questions the questionnaire aims to answer all research questions. Parts of the questions are considered branching questions. All branching questions are logically ordered. The questions included one scaled structured question to measure the SD importance (Savenye and Robinson, 2005). Two dichotomous questions were used to directly investigate the perception of HU students' towards SD. Personal interviews took place at the end of the fall semester (HU first semester) of academic year 2012. These qualitative data helped in understanding how students perceive SD as a new educational concept as well as the extent to which they are willing to recommend this type of education to others and pursue graduate education in SD.

Results and discussion

All interviewees were freshmen students at HU. The sample included 26 students enrolled in the Faculties of Engineering, Business and Economics, and Pharmacy with a total number of ten, four, and 12 students, respectively. The sample included 17 male and nine female students. The interview lasted for 15-20 minutes per student. Although the introduction to SD course is in English, the interviews were conducted in the Arabic language. The interviews were conducted in Arabic to overcome any language barriers. The term SD was translated to "تنمية مستدامة". The used translation of the term SD is a commonly used term and reflects accurate reference of the meaning. All questions were based on our research conceptual framework in terms of addressing the research problem and its subcomponents. The framework is intended to also answer the research major and minor questions. Interview questions assessed diversified SD issues as were raised in the literature review section. As such students' awareness regarding the importance of securing future generational needs and the interrelationship between economic, environmental, social, and culture significance as engines for SD UNESCO (2004, p. 20) were investigated. Sustainability as a lifestyle (Kuhtz, 2007) and daily practices represented a valid dimension of our qualitative analysis. One of our core investigational points was closely nearby Nita and Agheorghiesei (2010) findings. Stating that sustainable developmental attitudes and behavior depend on education as a main platform for sustainable behavior diffusion.

This research paper covered the literature gap concerning what students really know about sustainability and how they perceive SD (Carew and Mitchell, 2002; Kagawa, 2007). In fact this point represents a core of the research findings and raises the importance of this paper. Unlike Lourdel *et al.* (2007), who used the cognitive map method to measure the students' perception of SD concept after attending training emphasizing the concept. This paper assessed students' perception toward SD after being formally enrolled in specialized university aiming to introduce SD principles and concepts. Our results are aligned with Lourdel *et al.* (2007) since we observed differences in students' perceptions before and after students' enrollment.

The findings are also aligned with (Cortese, 2003; Moore, 2005) since the paper supports the idea of exerting time and effort in order to effectively integrate ESD in all universities fields of study. By definition, HU is fully in support of findings (Cortese, 2003; Moore, 2005), which give more emphasis on collaborative learning. Students and

instructors practical activities as a mean to introduce and facilitate understanding of SD principles were investigated. On the other hand, as Segovia and Galang (2002) pointed the validity of university relationships with various stakeholders to ensure implementation of SD was clearly highlighted in the analysis. Following are the results categorized according to the questions' focus as SD, Sekem farm, importance of SD, communicating SD with others, activities/facilities/methods at HU, and IAP.

Sustainable development

When students were asked if they had ever heard about SD before joining HU, all 26 students confirmed that they had never heard the term "SD" before joining the university. At the completion of the first semester, students expressed their perception about SD. 20 students stated that SD is an excellent and important concept. 14 students indicated that SD is essential for the future as it cares for people and society and increases awareness. Ten students thought that SD is about creativity and new integrated solutions. Seven students mentioned that they used to know about related concepts or do activities related to SD without knowing at the time that it was SD (e.g. recycling, preventing pollution, etc.). Four students expressed that SD is possible but there are many challenges for its application especially in Egypt (e.g. costly, long-term, etc.). Three students suggested that SD should be introduced to children and youth at an early age. Two students confessed that they used to dislike SD due to its restrictions, but over time their perception and behavior have changed. It is apparent from the above results that students' appreciate the concept of SD when they understand its full meaning. Thus, we may assume that early childhood awareness and ESD adoption are positively correlated.

Sekem farm

When students were asked about linking the farm as a model for sustainability, they showed an increased level of understanding – albeit on a very shallow level. This is because the students have just been introduced to the concept and this is their first term at the university. Over the course of the coming semesters and years, the students will be taught how to understand and have a deeper sense of linking sustainability to the practical examples and models shown on the Sekem farm. This is in support with the concept that ESD principles, when introduced and built upon, evolves and becomes more deeply rooted within the student as time goes on.

The previous analysis is supported with the students' responses as detailed in the following. 11 students expected that Sekem farm would be traditional farm including a number of cultivated lands, factories, and laboratories. Eight students did not know what to expect, and three students have visited Sekem farm before. After the visit, the students' perception had changed and 81 percent of students indicated that their perception was more positive than their previously stated expectations. 11 students mentioned that they were impressed by the social and cultural values found at the Sekem farm through the creation of a complete interconnected system that is categorized with team work, assertiveness, efficiency, and care. Students also noted the presence of German nationals working and volunteering to support the Sekem initiative. 11 students mentioned the education and health services presented to the Sekem community through a number of diversified schools, and availability of adequate health services. Ten students stated that the location of the farm is unique

and facilities at the farm are inclusive including restaurants and a theatre. Students also highlighted the facilities' shape, size, and colours were distinguished. Ten students noted the space and activities involved in agriculture and animal-raising at the farm. Two students confirmed that Sekem is a model for SD. One student commented that Sekem farm grew overtime. Though they listed the functions of the farm as separate or isolated activities, they did not make the holistic connection to the internal supply chain within the SD theme. This is because they are still learning the SD concepts, which will be nurtured and grow overtime.

Importance of SD

Students were asked to evaluate their perception about the importance of SD on a scale of 1-5 (highest is 5 and lowest is 1). 65 percent selected the value of 5, 31 percent selected the value of 4, and 4 percent selected the value of 3. Despite the lack of a deep understanding of the sustainability concept, the students still showed a desire, and expressed a full appreciation of the SD concepts. This is because the HU instills a love of the concept and conveys the importance of SD in their lives and on the community around them; this is beside the core program which infuses SD concepts within each course. From a purely marketing perspective, HU has created a very positive brand image with its association within the students' minds even though they are still exploring the full meaning of SD – which is to be expected being at the beginning of discovering SD concepts and being introduced to it for the first time.

Communicating SD with others

Whenever an institution has a strong brand, it creates a strong loyalty to that brand. This is exactly what is needed and expected for an institution to grow. After creating loyalty, the stakeholders that have become loyal spread the concept and the idea of the institution to their community, which then creates a strong level of awareness about this institution. This mechanism makes the switching cost from one institution to another higher and makes it more difficult to make that transition. But, all of this is based on introducing a new product concept and making sure that stakeholders understand its full meaning. HU students are the most important tool in spreading SD concepts within the Egyptian community. To understand this point more clearly, we asked the students if they had communicated the concept with friends and family. All students are convinced with the concept of SD (as noted previously) however, only 21 students communicated the concept to their family and friends through non formal discussions. Students tried to explain SD through giving examples and changing the misconceptions about SD. Examples were used as follows:

- we should plant our own food: organic food is healthier and cheaper;
- recycling could be a money making business;
- SD is an integrated concept involving cleanliness, development, politics, economics, etc.;
- HU and Sekem follow SD through the different activities, facilities, and methods used; and
- Egypt has suffered from a lack of environmental protection, e.g. use of DDT, Hepatitis C, etc.

Only 86 percent of the students' families were convinced with the concept and among their friends, even less (62 percent) were open and positive to discussing SD. Friends who were not convinced stated the following reasons:

- SD is not a well-known concept and therefore there is a lack of awareness;
- most youth are focused on their daily tasks rather than being interested in intellectual discussions. Youth are not concerned about future generations; and
- SD is not realistic and hard to realize. It seems to be more theoretical than practical and is for long-term planning.

The resistance from the parents and the families is to be expected due to low cultural community resources and awareness. The more that people hear and learn about SD principles when they are young, the more the deeply rooted behavior of distrusting SD can be changed and finally removed. This further proves that fully understanding the product concept is very important to understand the product idea and to understand the full meaning of SD. That is why HU put an emphasis on the practical experiments and facilities (such as the farm visit) in order to drive home the idea of these concepts. HU, using these methods, is not only introducing an idea or a theory (or that green is just a color), but is encouraging a green style of living within each of its stakeholders.

Activities/facilities/methods at HU

The SD as a concept full of brand associations is composed of some elements that the students have identified. Education is considered to be the core of a flower. However, even if the core is the same, usually the petals differ from one to another. It is the same in different universities as the core is always education, but the results and side results can be different. HU, on the other hand, has a different core (ESD) and its petals are completely different due to using the concepts of SD; this brings out radically different results from any other university in Egypt or the Middle East. These petals are represented in the following activities. When asked about activities/facilities/methods at HU implemented to sharpen the delivery of the SD concept, 11 students listed planting our own vegetables at the university, five students listed eating healthy and organic food at the university's cafeteria, two students mentioned doing hands on activities, two students mentioned how HU is applying recycling and non-smoking policies, and two students expressed how students are welcomed to participate and initiate activities at the university, e.g. exchange programs. For the facilities, eight students listed the presence of solar panels; wind turbines; laboratories; and workshops, seven students commented on the green space available at HU, six students mentioned the presence of coloured baskets for recycling, peaceful environment, and the number of windows for natural lighting; Four students mentioned the botanical garden. With regards to the methods, six students focused on the qualifications of professors and staff (clear roles responsibilities, and respect of students), five students commented about the number and variety of lectures by professors and Dr Aboueleish (the founder of the University) about different aspects of SD, four students mentioned the use of the core program and an active learning approach, four students mentioned having SD as a subject, and two students mentioned Sekem as a live model for SD.

For the suggestions, students suggested a number of activities/methods, etc. or modifications on existing ones at the university to sharpen the concept of SD among students. 15 students suggested holding field trips, internships, and company visits

for deep understanding of SD. 14 students suggested initiating activities related to SD that would be more practical and appealing to students with a consideration to any language barriers (e.g. use of recycling at home and in the neighborhood, community service projects in villages with SD applied solutions). Seven students suggested using more media and internet. Five students requested not to use SD as a subject. Four students suggested using new professors, equipment, and facilities.

International association for partnership

Part of the brand association is building the students' personalities; these brand associations you can be related to the previously mentioned flower petals. In order to measure the nurturing of the entrepreneurial spirit of the students as a unique service provided to students you may name that as a brand association (or flower petal). For this reason, researchers asked the students to evaluate the meeting with the IAP pioneers in SD and the lessons that they learned. Only 62 percent of the surveyed students attended the meeting. 12 students were impressed by how the IAP pioneers were friendly and were interested in sharing their experiences, success stories, innovation, and creativity. Ten students learnt how all IAP pioneers started on a small scale but due to their commitment, perseverance, hard work, and strong will, they became among leading companies/initiatives in the world. Seven students learnt that SD can be applied and there are many examples across the world for effective implementation. Four students learnt that money is not the most important issue or factor in planning your entrepreneurial idea. Two students quoted the IAP pioneers a challenge brings a chance. All students indicated that they would like to become entrepreneurs in the future. 54 percent were able to identify their planned projects and 46 percent did not. The identified projects included:

- a farm similar to the Sekem model;
- engineering company;
- integrated village;
- solar panels;
- hospital for my village;
- cradle to cradle;
- textile factory;
- organic pharmacy; and
- tailor my father's current business.

SD is part of the learning process as mentioned above and is an evolving concept. This was shown when the students were introduced to the IAP pioneers they were impressed and expressed appreciation for them and a willingness to go and intern at one of their companies. They started to link entrepreneurial dimensions with SD concepts. So, when asked on how the students feel about having an internship in one of the IAP companies during summer, 92 percent of the students expressed interest in having an internship and expressed how this experience can positively affect their future career, 22 students expressed that if they go for the internship they will gain work experience, knowledge, and insight about the IAP companies, six students noted the gain of cultural experience through learning and living in a new culture

and learning a new language, and three students expressed that the internship experience will help them to be able to understand SD better through practice. When students understand the full meaning of the product concept they start to recommend it, this was proven by their answers. When asked if they would recommend this type of education to others, 88 percent recommended this type of education to others as it is both important and beneficiary, to spread awareness about SD and help in building capacity for future progress, it is a unique and successful model, and this type of education should start at an early age and for all students.

Conclusions

Although the HU students' short experience with the university and limited engagement with the SD concept over the past semester, their responses and plans for the future illustrate an adequate understanding of the concept and its applications, their ability to list examples, identify solutions, and also try to envision their future reflects how far they have been emerged in thinking and realizing the concept of SD. The students' responses can be categorized as observation and realization of SD concepts through their surroundings (Sekem farm, HU, and community), needs and suggestions to sharpen their understanding and application of SD, and future plans in relation to SD.

Observation and realization

As an essential stakeholder in HU, students are realizing the main theme of the University through their answers, as 77 percent of the students confirmed the importance of SD and 100 percent of the students stated that they are convinced with the concept. They feel a high sense of responsibility towards their local community and Egypt at large as 81 percent communicated the concept to family, friends, and neighbors. Even with the resistance they faced, students expressed their interest to continue disseminating information and practice about SD through their close contact circles.

Needs and suggestions

To sharpen their understanding of SD, many students suggested initiating practical activities and reaching out to local and international communities with: field trips, internships, and company visits (15 students), and serve underserved areas as Egyptian villages through community service projects (14 students). On an international level, students realized that they can learn from others' experiences through sharing and learning. Two students quoted one of the IAP's pioneers "a challenge brings a chance," and shared their thoughts on it. Other students realized the role of innovation and creativity for entrepreneurs, money is just one of the resources, and perseverance and hard work are the road map for success (as illustrated by ten students). 92 percent of the students also expressed interest to hold an internship at any of the IAP companies to gain work experience, cultural exposure, and better understanding of SD. Accordingly, HU and IAP companies have developed a structured summer internship program to start academic year 2013/2014.

Future plans

All students confirmed their interest and ability to apply SD in their own lives through daily life behaviors, respecting nature and learning from existing models such as Sekem farm, human development, and green economy. Three students also commented

that their application of SD is for a cause which is Egypt's development. 88 percent of the students would suggest this type of education to others. Students are focused on making a difference rather than making profit. In addition, all students see themselves as future entrepreneurs. 54 percent of the students had a clear vision of what project they would like to implement in the future. Future project were all related to SD and their local identified needs.

Recommendations and future research

The findings are considered a rich input that the HU management and leadership can utilize for curriculum development and continuous improvement. HU should continue its activities and programs with a focus on SD; however, HU should focus on hands-on activities and outreach to other audiences outside the University's facilities and premise. This research paper has explored the willingness and interest of students to conduct community service activities and internship. Program's satisfying students' needs and suggestions should be developed and immediately implemented. Research results should be disseminated to all HU faculties, management, and supporting staff for better understanding students' perception about SD. Research results also should be shared with other high education institutes not practicing SD with the aim of assisting them in integrating SD in their curriculum. HU should build up on the students' enthusiasm about attending internships with IAP companies and proceed in maintaining this bond of cooperation and learning.

For future research, the findings showed that there are possible areas of further investigation, for instance conducting a longitudinal study at the end of the year with the same students and same interview guide, performing a comparative study with Egyptian students enrolled in universities following conventional learning model, and administering a comparative study with students enrolled in European universities which integrate SD within its curriculum.

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