# ESSENTIAL INPUTS TO EVALUATION THE B-LEARNING UNDERGRADUATE PROGRAMME IN ENVIRONMENTAL SCIENCES

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## Abstract

The undergraduate programme in Environmental Sciences (UPES) have a higher contribution to sustainability and produce better-educated graduates in sustainability areas. To evaluate the UPES, two questionnaires were applied: (a) to the students who dropout; and (b) to the graduates. Also, a student satisfaction questionnaire was used that obtained very positive answers about the experience with online teaching, the coordination team and have very positive general satisfaction of UPES. It was found that most students dropped without doing any course, which may indicate that they have not adapted to this type of Online Education. The positive and negative aspects presented by the dropouts were very dispersed, which reveals that they did not know UPES deeply. Mostly graduates work in the environmental and related areas and have move up their professional careers. The positive and negative aspects among graduates revealed greater knowledge and involvement in UPES, showing, in addition to a good study plan, proximity and collaboration between students and teachers.

## Introduction

Programme courses that deliver an education to sustainability are needed, and also more and better-educated graduates who understand and implement holistic and trans-disciplinary approaches that address the four dimensions of sustainability (economic, environmental, social, and time) and their inter-relations. Programmes with higher contribution to sustainability are, among others, the undergraduate of Environmental Sciences (Lozano & Young, 2013).

While conducting program evaluations, it is important to clearly identify the types of stakeholders among the people surrounding the program, as they are likely the main informants who can tell about the quality and value of the program (Chyung, 2015). The evaluation processes in educational institutions can be undertaken via a survey of students who withdraw from the online courses and students who continue to study using e-

learning systems (Alsabawy, Cater-Steel, & Soar, 2016). The premise for reducing dropout rates is to understand the various factors associated with dropping out. The key to reducing dropout rates is to make use of these factors to screen out potential dropout students and take targeted retention measures before the dropout behaviour happens (Tan & Shao, 2015).

The Undergraduate Programme in Environmental Sciences (UPES) at Universidade Aberta (UAb) is a b-learning programme, directed to an adult public (>21 years old), who are mostly working-students seeking professional development. This 1st cycle degree UPES is already in its 12th edition and is the only programme being offered mostly in an e-learning context in Portugal. The UPES follows the UAb pedagogical model in its virtual class regime (Pereira et al., 2008), excepting for two curricular units (Fieldwork I and Fieldwork II) which include a face-to-face component (Martinho et al., 2016). In this learner centred pedagogical model, based on the flexibility of access, without temporal or spatial constraints, the students are responsible for knowledge building.

The main goals of this study is to characterize the integration of the graduates in the labour market after finished the UPES, the degree of satisfaction with the UPES, and we are interested to know what are the graduate's opinions about weaknesses and strengths of UPES. We also wanted to know the reasons that led Environmental Science students to drop out and to identify their opinions about weaknesses and strengths of UPES.

## Methods

Some questions from the satisfaction surveys applied in the 2018/19 academic year by the Universidade Aberta, Portugal, to students were select. These surveys are applied at the end of each semester and have as main objective the continuous improvement of all evaluated parameters. The average response rate to the Environmental Sciences student surveys in 2018/2019 was 16.9%. The complete results of these surveys can be found at: https://portal.uab.pt/sgq/inqueritos/.

An additional online questionnaire was delivered to 104 students who dropped out of UPES between 2014 and 2019. Thirty dropout students answered this survey corresponding to a 29% response rate. It consisted of 14 questions divided into the following areas: socio-demographic characterization; reasons to give up UPES; and positive, negative aspects of UPES. Another survey was also applied, but now to graduates who finished UPES between 2014 and 2019. It consisted of 21 questions divided into the following areas: socio-demographic characterization; employability of graduates; and positive, negative aspects of UPES. An online questionnaire was delivered to 90 graduates and 43 submitted their answers corresponding to a response rate of 47.8%.

## Results and Discussion

In this section are presented the results of the three applied questionnaires: (a) to undergraduate student´s satisfaction survey – Academic Year 2018/2019; (b) to dropout's students of UPES (2014 – 2019); and (c) graduates of UPES (2014-2019). These three questionnaires were used to cross information and have as much information as possible in order to implement future improvements in UPES.

### *Undergraduate Student´s Satisfaction Survey – Academic Year 2018/2019*

Regarding student's satisfaction (Table 1), results shows that 91.4% have positive general satisfaction (58.4% *totally agree* and 33% *partially agree*), satisfaction with the experience with online education have 87.65% of agreement (50.6% *totally agree* and 37.05% *partially agree*). Students revealed around 11% of a non-compromising position in relation to the experience with the online education and 1.35% of disagreement. Another important parameter evaluated in this UAb survey is the opinion about the coordination team. Results shows 98.65% of positive experience (57.85% of *totally agree* and 40.8% of *partially agree*) and no negative opinions were found.

Table 1:     UPES Student´s Satisfaction Survey – Academic Year 2018/2019.

|  | Totally agree | Partially Agree | Not agree or disagree | Partially Disagree |
|---|---|---|---|---|
| General satisfaction | 58.4% | 33% | 5.4% | 3.2% |
| Satisfaction with the experience of online education | 50.6% | 37.05% | 10.95% | 1.35% |
| Satisfaction with the performance of coordination team | 57.85% | 40.80% | 1.35% | 0 |

### *Dropouts of undergraduate program survey in Environmental Sciences (2014 – 2019)*

UPES students are characterized by having more men (63.2%) than women (36.8%) according to the information from academic services of UAb. Regarding the graduates who answered the questionnaires, this proportion remains almost unchanged (Table 2). Regarding the dropout rate between women and men, this proportionality is no longer verified. It reveals that women abandon more the university (50% vs 37.2%) than men (50% vs 62.8%). One must try to understand the reasons for this difference found. One possible explanation is that our female students give up university in order to support the family and some future concrete solutions should be considered to reduce these dropouts.

Table 2:     Gender of dropouts, students and graduate students of UPES -Survey (2014 – 2019).

| Gender | Female | Male |
|---|---|---|
| Dropouts | 50% | 50% |
| Graduates | 37.2% | 62.8% |

Among the dropout students, 73.3% have not completed any course, 10% only have completed 1-5 courses, 6.7% 6-10 courses and 10% completed more than 16 courses (Table 3). Considering that there is such a large number of students with zero completed courses, it should be should be more deeply studied. It is curious to note that when dropout students were asked if they had the intention to recommence their UPES studies at UAb, 73% answered that, yes, they have that intention and 27% said they did not.

Table 3:     Number of completed courses between dropouts' students

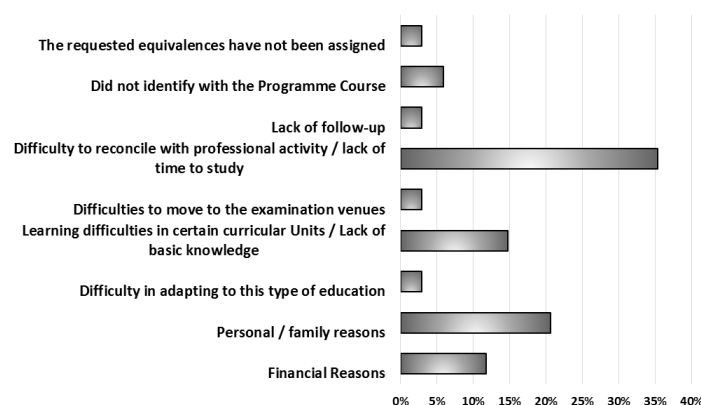| Number of completed courses | 0 | 1-5 | 6-10 | 16-20 | 26-29 |
|---|---|---|---|---|---|
| Dropouts | 73.3% | 10% | 6.7% | 6.7% | 3.3% |



Figure 1. Reasons for giving up the b-learning UPES (34 answers)

The four main withdrawal reasons found were difficulty to reconcile with professional activity / lack of time to study, Personal / family reasons, Learning difficulties in certain curricular Units / Lack of basic knowledge and Financial Reasons (Figure 1). These results are similar to other studies (Aydin et al., 2019; Lee, Choi, & Kim, 2013; Park & Choi, 2009; Street, 2010).
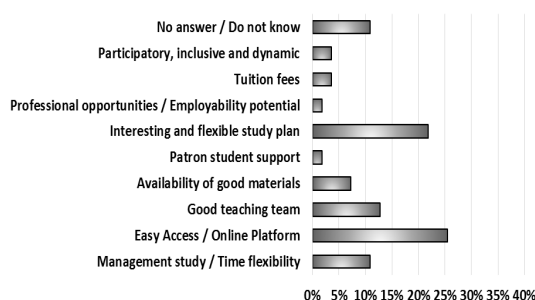


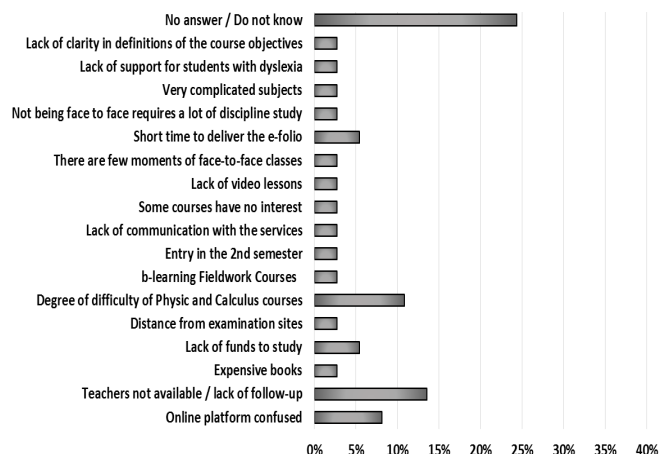Figure 2. Positive aspects of the UPES (dropouts) (55 answers)

Figure 3. Negative aspects of the UPES (dropouts) (37 answers)

Regarding the positive aspects of UPES between the dropout students, this study found that the four most frequent responses (in 9 different answers) were "Easy Access/Online Platform", followed by the "interesting and flexible study plan", "good teaching team" and "management study/time flexibility" (Figure 2). In relation to the negative aspects, the results show more widespread replies (Figure 3). Around 25% of the dropout students mentioned "didn't answer / didn't know", followed by "teachers not available / lack of follow-up", "Degree of difficulty of Physics and Calculus courses" and "Online platform confused".

### *Graduates of undergraduate program survey in Environmental Sciences (2014-2019)*

Table 4 shows the employment situation of the graduates in Environmental Sciences between 2014 and 2019. It allowed 37.2% of the graduates to be able to move up the professional career, thus constituting the achievement of an important objective when students enrol in the course. Of these graduates, more than half (56.3%) achieved it in less than a year, which leads us to believe that this is a positive point that should be emphasized, especially when students assume that there is no recognition of the course by the entities. Regarding the high employability rate of students before and after finishing the course (95.3%), this is in line with the general characterization of this type of audience, since distance learning students are adults inserted in the labour market (Chao, DeRocco, & Flynn, 2007). More than half of the graduates (51.2%) currently work in the area of Environment Sciences or related areas.

Table 4:    Employment situation of graduates in UPES (2014 – 2019)

| Situation | % |
|---|---|
| Unemployed before and after UPES | 4.7 |
| Employed before and after UPES | 95.3 |
| Currently employed in Environmental Sciences and related areas | 51.2 |
| Climbed the professional category after UPES | 37.2 |
| Climbed professional category until 1 year | 56.3 |
| Climbed professional category after > 1 year | 43.8 |

Regarding the expectations of the graduates about UPES, Figure 4 shows that maximum scores (8, 9 and 10) were find in 89% of the responses. Barth and Burandt (2013) concluded that substantial benefits can be derived in higher education from the use of e-learning as a facilitator of on-going innovation in education for sustainability.
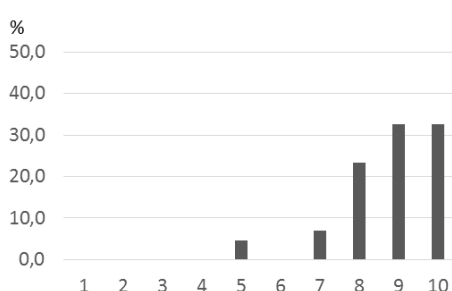


Figure 4. Expectations of graduates related to UPES.
The scale ranges from 1 – *did not correspond* to 10 – *fully corresponded to expectations*

Among the graduates, there was a list of 15 positive aspects, in 101 answers (Figure 5) and in relation to the negative aspects there was a list of 26 different classes enunciated in 61 answers (Figure 6). Regarding positive aspects, the "interesting and flexible study plan" was the most nominated, followed by the "good teaching team", "easy access/Online platform" and "face-to-face fieldwork courses", "management of study/time flexibility", "mutual aid between students and teachers" and" Rigor/ Scientific requirements". Baker and Moyer (2019) suggest that students who perceive a sense of community in an online course will have more favourable online course impressions. Students who felt they established a connection with others had higher levels of engagement, perceived value to career, overall evaluation and preference for online courses, and lower levels of anxiety/frustration. This fact may explain the maximum scores (8, 9 and 10) found in the expectations of graduates related to UPES in the Figure 4 above.

Regarding negative aspects, "the absence of videos/absence of synchronous moments" was the most enunciated aspect, followed by the "lack of recognition by the entities" and "teachers not available/lack of follow-up/slow responses" and followed by "outdated study materials/some shallow subjects/maladjusted subjects". The 5th score response of graduates was that there are "no negative aspects". Regarding negative aspects, "the absence of videos/absence of synchronous moments" was the most enunciated aspect,

followed by the "lack of recognition by the entities" and "teachers not available/lack of follow-up/slow responses" and followed by "outdated study materials/some shallow subjects/maladjusted subjects". The 5th score response of graduates was that there are "no negative aspects". According to Violant and Vezzetti (2015), an interactive multimedia module (which includes video, animations, simulations, audios, and films) can visually stimulate a student and transform learning into an active engaging process. Also, the feedback given by teachers help students to clarifying things and help students to improve the ways of learning and studying (Palmer & Holt, 2009; Vaz-Fernandes & Caeiro, 2019). Those negative aspects ate an important alert in order to improve some modifications in the UPES.



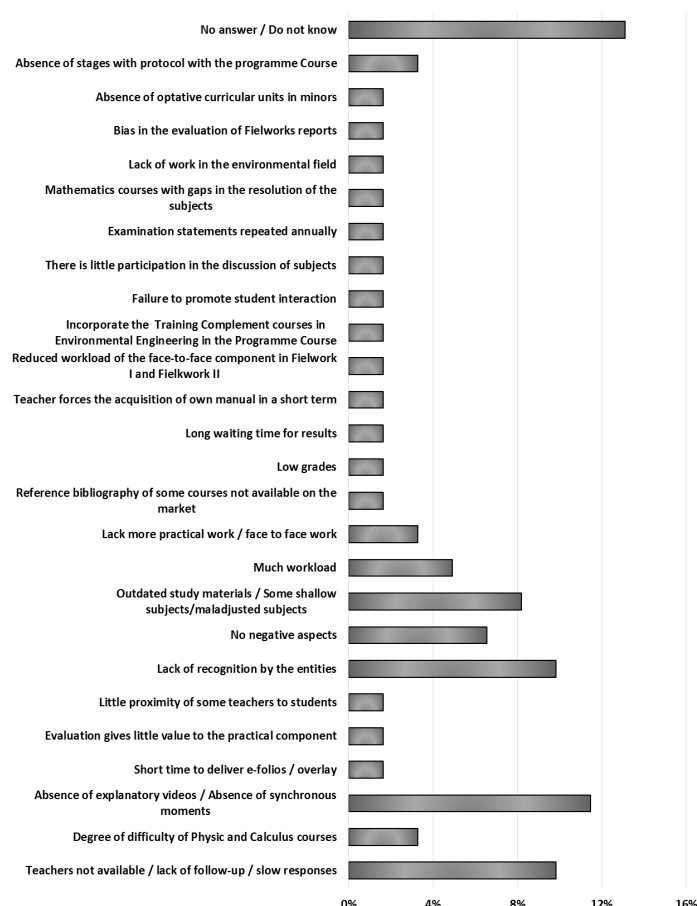Figure 5. Positive aspects of the UPES (Graduates) (101 answers)

Figure 6. Negative aspects of the UPES (Graduates) (61 answers)

## Conclusions

We can conclude that the choice of stakeholders for the evaluation of the programme course is a very important measure because only the participation of students is not enough. For this reason, we extended the assessment to students who dropped out and to the graduates in Environmental Sciences. Therefore, it was possible to deepen the positive and negative aspects of the UPES and have information for future improvements. This study also allowed better understand the current situation of employment of graduates.

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