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Engaging ICT Engineering Undergraduates in a Management Subject through First Day of Class Activities: An Empirical Study

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Abstract: The expectations, attitudes, engagement, and motivation of students are key elements when designing learning activities. Several studies have been implemented and different strategies and activities have been analyzed to improve the aforesaid aspects of learning content. In the context of the New Learning Context (NLC), this paper presents the findings of two first day of class activities aimed at engaging engineering students in a business and management subject from the very first moment: an empirical study conducted by means of a survey answered by engineering students in Information and Communication Technologies (ICT), followed by an interactive activity between students and instructors carried out through a reciprocal interview activity. The survey was performed with the objective of identifying what they 'liked' and 'disliked' on their first day of class of a business subject. The findings are presented and compared with previous studies and have proven to be mostly consistent with previous academic work. Finally, a reciprocal interview activity was chosen to potentially enhance the students' engagement and motivation. According to the feedback received, this activity was positively valued by the students.

Keywords: engagement; engineering students; first day of class; ICT; management; motivation; reciprocal interview activity

1. Introduction

All first encounters that human beings have with someone or with something generate initial impressions or perceptions that tend to remain in their minds for some time. Just by looking at someone's face, even for less than a second, people make judgments about that person [1–3], although accuracy is not granted [4,5]. In fact, short behavioral observations, from half a minute to five minutes, seem to be enough [6,7]. First impressions about people may be shaped by clothing [8], body language [9], and so on. Shaping first impressions also applies even when thinking about products, such as website aesthetics [10]. Furthermore, first impressions can condition beliefs and behaviors [11]. In terms of education, the first day of class may have a multisided impact on students [12–14].

Several researchers have studied whether students' first impressions have a long-lasting impact on their perceptions of subjects and instructors. Buchert et al. [15] concluded that students formed lasting impressions about academic staff within the period of the first two weeks of class. Laws et al. [16] found that the impressions students had formed during the first week persisted until the end of the semester.

Most ICT engineering syllabi include, in addition to specific engineering knowledge, other topics that provide an all-round formation. In fact, both specific technical knowledge and nontechnical competencies are required [17,18], including teamwork, communication,

problem solving, or leadership skills [19–23]. Along these lines, basic knowledge in business and management was introduced in engineering programs, since these topics are necessary to complete the training of students and improve their employability [24]. However, some engineering students have shown a degree of reluctance when they were first presented with subjects that they perceived to be quite far from their area of personal interest [25,26], for example, business or management subjects taught in ICT engineering programs. Therefore, all the efforts made by instructors in the first session of a subject to enhance engagement and motivation should be carefully planned because of the positive (or negative) impact that they could have on the students [12,13,27,28].

The general aim of this research was to explore two activities carried out on the first day of class of a management subject, in order to increase the students' expectations, engagement, and motivation. Specifically, the first purpose of this this paper is to describe an empirical study on what undergraduate ICT engineering students liked and disliked on the first session of class, contextualized in a management subject. The second objective of this study is to show the students' assessment of a reciprocal interview activity carried out during the second part of the session. Both activities were designed to enhance the appeal of the management subject and allow students to meet their peers and instructors.

The article contributes to the literature by analyzing the outcomes of two different first day of class activities hypothesized to enhance the appeal of a management subject. Given that all the participants in this research were second-year ICT undergraduates, all the findings about the efforts oriented to increase expectations, attitudes, and engagement can shed light in designing good practices to be included in subjects that are not included as core topics according to the perceptions of some students.

2. State of the Art

All the efforts and activities that instructors may implement to increase expectations, attitudes, engagement, and motivation on the first day of class of a subject can be crucial to their success in teaching the entire subject. The relevance of this topic is reinforced by the fact that most books dealing with teaching have a chapter dedicated to the first day of class, e.g., [29–33]. Therefore, the findings of previous research works are synthesized as follows.

2.1. Enhancing Engagement and Motivation the First Day of Class

Motivation to learn is a construct that has been defined by different authors, i.e., [34,35], and can be defined as identifying chosen individual behaviors to reach a specific goal [36]. The motivation to learn has been formalized by means of different theories as shown in [37], the contemporary ones being summarized in [38] as follows: expectancy-value, attribution, social cognitive, goal orientation, and self-determination.

The engagement construct has been conceptualized through different definitions that may include different components [39,40]. Engagement is an observable action, as it can be defined as 'energy and effort in action' [40], and some tips to enhance engagement have been identified in research works [41].

On the one hand, according to several research works, students' motivation is correlated with academic success [42,43] or with an impact on their engagement [44]. In fact, motivation may improve different academic outcomes [45–47]. On the other hand, engagement is related, among other issues, to improved achievement [48,49], decreased dropout rates [50], or to the creation of a positive class climate [51].

The very first day of class can be seen as an exceptional opportunity to implement activities that may help develop students' expectations [12,52,53], attitudes [13,54], engagement [12,55–58], or motivation [13,14], while also determining the learning environment and class atmosphere for the remaining sessions of the subject [59,60]. Although such actions are obviously designed to improve class dynamics, some may have negative effects on students' perceptions.

2.2. Studies about 'What Likes' and 'What Dislikes' to Students the First Day of Class

Several studies have been performed with the aim of identifying both the 'likes' and 'dislikes' that students preferred on their first day of class. The main works and findings include the following.

In an empirical study, Perlman & McCann [53] identified what they labelled as 'works well' and 'peeves' on the first day of class by means of two open-ended questions. They identified and taxonomized seventeen different categories and added the number of occurrences for each one of the normalized options that they identified from a survey of 570 undergraduate students. It should be noted that in some cases an item that 'worked well' for a student could be a 'peeve' for another student. The general trends of students' preferences were the following: general information about the subject (syllabus, overview of the subject, etc.); grading system and information about the instructor (background, teaching style). Among the peeves, homework assignments and beginning the subject content the first day of class were ranked at the top of the list.

Henslee, Burgess & Buskist [61] asked 146 undergraduate students by means of a twenty-nine item survey (twenty-two items to be ranked and seven open-ended questions) about the first day activities, with the aim of identifying student preferences. Results detected that student's favorites were 'information about the class structure' and 'coursework'.

Basset [62] surveyed 249 university students, identifying the following as valued preferences: information about the subject difficulty, professional information about the instructor, structure and content of the classes, procedures followed in class, and also personal information about instructors and peers.

In an empirical study, Eskine & Hamer [63] asked 230 undergraduate students to replicate the aforementioned Perlman & McCann empirical study [53]. The authors asked the identical open-ended questions and classified the answers according the same seventeen categories that were formerly identified in the study performed by Perlman & McCann. In terms of 'likes', the top findings were the same, whereas when talking about 'dislikes', the two top topics were 'poor use of class time' and 'beginning subject content'.

2.3. Activities Carried out the First Day of Class

During the first day of class, a variety of different actions and activities can be performed to achieve different goals [27,55,64]. Iannarelli, Bardsley & Foote [64] highlighted four basic actions that can be performed on the first day of class: explaining subject expectations, where the content of the syllabus plays a key role; learning about students; introducing the instructor; and establishing the right tone.

Some of the actions that have been experienced during the first day of class are listed as follows:

- The most basic activity could be to introduce the academic staff and present the syllabus. Sometimes the instructors start giving contents after the presentation or choose to end the first session of class. Along this line, several activities are described in [65] as examples of 'what not to do' during the first session of class session.
- Creating positive and/or negative 'experiences' on purpose during the first session of class. For instance, Wilson & Wilson [13] showed two different videos explaining the syllabus to different groups of students. In one of the videos, the instructor gave the presentation in a friendly way, whereas in the other one the instructor presented the syllabus while avoiding emotional tone and followed the syllabus presentation by another video that generated a homework assignment to be performed. Another experience, related to a psychology subject, is described in LoSchiavo, Buckingham & Yurak [66], where an instructor showed up at the classroom and after asking the students to fill out some information, he told them to stand up and face the back of the room; later, after some minutes and once the real instructor appeared, they discussed the topic of obedience.
- Introducing topics to create students' interest in the subject. Within this category, icebreakers could be included. Different activities were performed in different fields

to create interest. Different academic experiences can be mentioned as an example, as follows: regarding economics, Helmy [67] played a lottery to assign a country to students in order to discuss their development problems; as for statistics, Bartsch [54] asked their students to generate anonymous questions to be answered during class on the first day, and Bennet [68] also analyzed probability by means of matching students' dates of birth; in the context of physics, Gaffney & Whitaker [69] asked students to answer Fermi's questions, in other words, to quantify questions to which it was quite difficult to obtain the exact solution in terms of their quantification, an experiential learning activity to introduce topics about 'operations management' [70]; using a Readers' Theatre technique [71]; or just whipping [72], a teaching activity to promote students' participation.

- Reciprocal interview activity. As described in different papers [12,73], a reciprocal interview activity consists of following these steps: (1) create groups of students; (2) offer a potential list of questions, as examples, to ask the instructor during the interview phase; (3) each group of students discusses the set of predefined questions that will then be asked to the instructor during the interview activity once the speaker of the group has been selected; (4) carry out the reciprocal interview activity in class, or the instructor asks the different groups what is the same, and finally; (5) students ask the instructor.

According to the academic literature, several objectives may be achieved by means of a reciprocal interview activity, as shown in different research works: building an awareness of students' and the instructor's goals and expectations [12,58,73]; gathering information about peers, the instructor, etc. [55,58]; encouraging class discussions and generating more comfortable interactions students-instructor [12,55,58,73]; creating a lasting effect on students' attitudes [52]; influencing students' motivation by increasing their perception of the interest and usefulness of the subject and also by transmitting attention to them [14] and; establishing a positive climate at class [28].

2.4. NLC at La Salle URL or Leveraging the First Class Session

Due to the new reality and possibilities of the educational sphere (digital natives, new technologies, etc.) the way of teaching may change and evolve [74,75]. In December 2018, La Salle Educational Mission Assembly (AMEL 2018) agreed to design and implement a new educational model in all its educational centers for all the different educational stages, from children's education to universities. This new model was named the 'New Learning Context' (NLC) and is currently being deployed in Spain after two years of design and implementation [76]. This deployment involved 104 centers, including two university colleges, such as La Salle Campus Barcelona (Universitat Ramon Llull) and La Salle Campus Madrid (Universidad Complutense de Madrid).

The NLC model [76,77] is based on five pedagogical principles that constitute a nonvisible substrate of the educational model. These principles are implemented through five learning environments, as shown in Figure 1. In short, the five pedagogical principles are as follows:

- Interiority: The educational model transcends the academic field, considering personal growth as an inseparable part of education.
- Mind (body and movement): This principle tries to convey the idea that learning takes place beyond the classroom. The NLC considers the use of space and its organization as the third educational agent, with students and instructors being the other agents.
- Thought Construction: The NLC should generate cognitive skills and abilities, structures, procedures, and strategies that develop different thinking processes and their use.
- Self-Regulated Behavior: The NLC creates spaces and experiences in which autonomous learning habits are encouraged, where each student learns to self-regulate his/her own pace, intensity, effort, commitment, and time required to reach the learning goals, which can be achieved through different paths.

- Social Dimension of Learning, which is structured on three fundamental levels: (1) the educational spaces, as a pedagogical element which favors social learning; (2) the organizational proposal, which specifies the pedagogical framework of coexistence; (3) the community, as a learning structure.
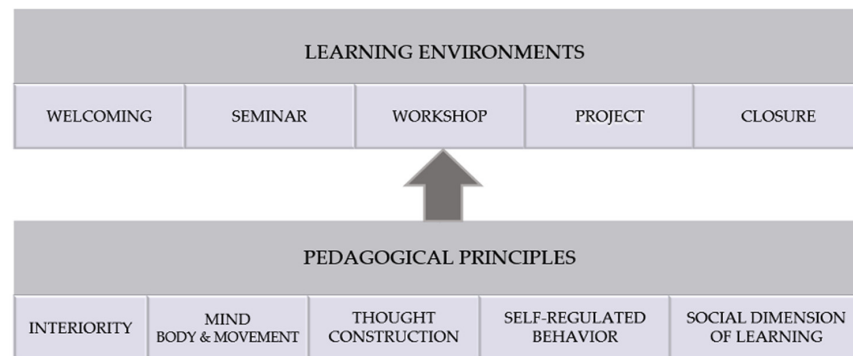
LEARNING ENVIRONMENTS				
WELCOMING	SEMINAR	WORKSHOP	PROJECT	CLOSURE

PEDAGOGICAL PRINCIPLES				
INTERIORITY	MIND BODY & MOVEMENT	THOUGHT CONSTRUCTION	SELF-REGULATED BEHAVIOR	SOCIAL DIMENSION OF LEARNING

Figure 1. Schema of the New Learning Context (NLC) structure: Five pedagogical principles and five learning environments.

The concept learning environment was widely studied and analyzed from different academic viewpoints, e.g., [78,79]. The learning environment constitutes an essential part of the NLC pedagogical model. In terms of methodology and teaching, the environment can be considered as a separate space with its own educational purpose. The NLC learning environments are as follows:

- Seminar (i.e., focusing on 'knowing'): seminars are organized as teaching areas to allow the student's acquisition of the concepts. In other words, seminars are knowledge areas in which different learning methodologies (such as, lectures, flipped classrooms, peer-to-peer learning, etc.) can be implemented to achieve the learning outcomes.
- Workshop (i.e., focusing on 'knowing how to be'): workshops are pedagogical environments in which the students use their own strengths to construct their own learning process. In the global context of the NLC Methodological Framework, workshops represent the integration of knowledge, allowing students to fully connect with multifaceted elements of their life. Workshops are orientated to build and develop the students' competences which in turn help them develop their own personality.
- Project (i.e., focusing on 'knowing what to do'): this interdisciplinary learning area enables students to learn competences through complex tasks. Those tasks are characterized by their transversal integration of knowledge, being developed in an interdisciplinary way by means of several different sources (scientific, social, historical, artistic, etc.). Projects are usually focused on a specific source, which is then complemented by the other ones, thus creating a learning environment in which students can truly grow, develop, and construct knowledge.
- Welcoming: this is an area of experience that can help students develop healthy study habits by means of different tools. It ranges from internal elements of the human being (such as reflexional, interiority, consciences, motivation) to organizational needs (planning, to-do lists, and objectives, etc.). Not all the welcome activities are mandatorily programmed at the beginning of the session. In fact, some activities may be scheduled just at the beginning of a specific activity or project.
- Closure: this implies the completion of the task. At this point, students assess the work done, make insights for the future, celebrate their achievements, and finish their session. This activity enables students to truly appreciate what they have learnt: conclusions about what they can make, or simply how they can take advantage of these conclusions, as well as being aware of the mistakes they have made and how to learn from them. In the same way as the welcoming sessions, closure sessions are

not necessarily programmed at the end of the day, nor do they always last the same length of time.

During the design period of the NLC, the focus was on substantiating and validating the pedagogical model, while different lines of research were created to assess the impact on the deployment of the model. Along this line, academic research has been performed on several NLC topics (e.g., about redesigning a subject [36], assessment issues [26,80], etc.). Three of the previously aforementioned areas (seminars, workshops, and projects) are well-established elements, which have been widely used and studied in a great amount of academic research. Nevertheless, similar efforts in terms of research have not been made for the other two elements (welcoming and closure, in NLC terminology). Therefore, all the efforts in researching items related to the first day of class will positively affect the effective implementation of the NLC.

3. Methods

The research was focused on obtaining data that helped to adjust both the activities and the content of the first day of class in a management subject taught to ICT engineering undergraduates. In this case, the research objectives related to the first day of class were: (1) to obtain information from the students about which activities they preferred to do, (2) to assess students' reactions to a reciprocal class-interview activity carried out in the first session.

Figure 2 shows a methodology to continue finetuning a subject taught in the context of an official undergraduate program once feedback from the students is collected. The initial design of a subject is clearly marked by the requirements established in the official program of the studies, according to the 'VSMA Framework' [81] (in Spanish, VSMA is the acronym that stands for Ex-Ante Assessment, Monitoring, Modification, and Accreditation). The main inputs of this design of each subject are the definition of content and methodologies along with the needs of academic staff and infrastructures. At this level should also be included the Smart Classroom (SC) [82,83], a technology that offers new teaching and learning possibilities and that was deployed in most of classrooms and laboratories in September 2020 at La Salle URL. Once classes begin, a review and update mechanism must be established. Usually, the main elements to analyze the operation of the subject are the surveys completed by students as well as the opinions of the academic staff. The text written in blue refers to the new elements that the present research work incorporates. On the one hand, the NLC establishes a general framework for the use of new teaching methodologies that the subjects should incorporate. On the other hand, two first-class instruments are proposed to complement the usual mechanisms to refine the subject.

The research related to both activities that were carried out on the first day of class was conducted in the context of the second-year management subject 'Value Chain and Financial Economics'. This is a core subject of all the ICT engineering programs taught at La Salle URL, where seven undergraduate ICT engineering programs are taught: Audiovisual Engineering, Computer Engineering, Electronic Engineering, Engineering in ICT Management, Multimedia Engineering, Telecommunications Systems Engineering, and Telematics Engineering. The activities took place during the first session of class in the first term of the 2020–2021 academic year, and surveys linked to both research activities were handed out to all students that attended the first two-hour class session.
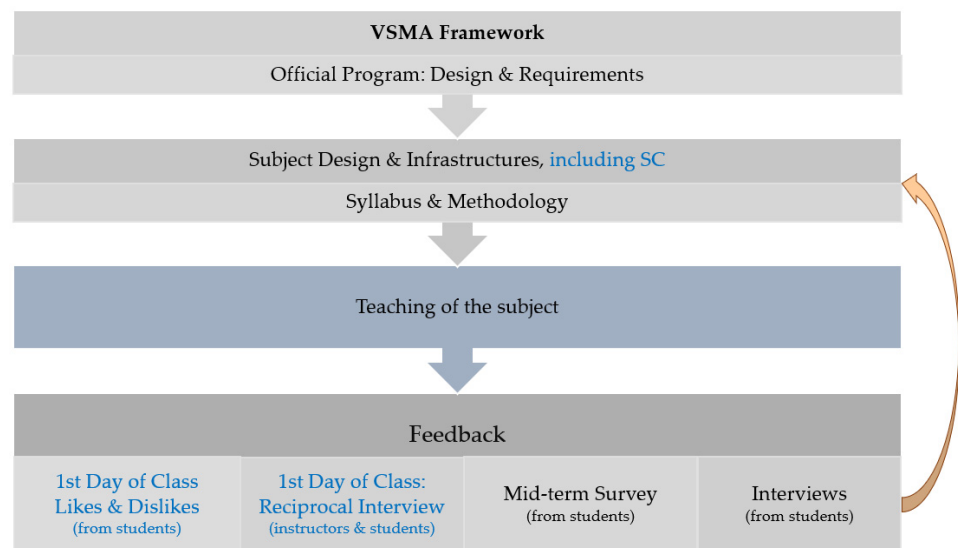
Figure 2. Proposed design and continuous finetuning of a subject in an official undergraduate program once feedback from the students is collected.

3.1. An Empirical Study: First Day of Class, 'What Likes' and 'What Dislikes'

The empirical study to determine the 'likes' and 'dislikes' of ICT engineering students the first day of class was performed during the first session of a second-year management subject. The questionnaire was handed out to the students in class just before a brief presentation of the instructors, after saying 'Hello, good morning' and giving the instructors their first name. At the top of the first page of the survey, data about participants were collected to allow segmentation of the data: 'university degree that you are studying', 'entrance' or access to engineering studies, 'age', and 'gender'. However, no identification in terms of names or any other data that could identify the student was required, resulting in an anonymous form. Each side of the paper contained one of the two open-ended questions: 'Which things would you like an instructor to do on the first day of class of a subject?' on the front side of the paper and 'Which things would you not like an instructor to do on the first day of class of a subject?' on the back side of the paper. Students were invited to answer the questions with a short sentence per idea (ideally, from one to five words, despite not being a specific restriction) to force students first to think and then write a synthesized idea.

Once all the questionnaires had been collected, the answers given by the students were reclassified in homogeneous categories independent of the literal wording of the answers. The methodology that was followed was the same performed by Perlman & McCann [53] and Eskine & Hammer [63]. However, homogenization was not initially restrained to the former taxonomy resulting from the Perlman & McCann's empirical study [53] in order to allow new items to be identified, resulting in the items listed in Table 1. Once the classification was completed, eventual matches in terms of different wording were identified to compare findings, despite keeping some topics disaggregated that were linked to motivation and utility of the subject once the data was analyzed.

Table 1. First day of class (all ICT engineering students): 'likes' & 'dislikes'.

Items [1]	'Likes'		'Dislikes'	
	n	%	n	%
General overview, syllabus, content, & expectations	107	78.10	16	11.68
Describing assessment & grading	75	54.74	12	8.76
Utility & objectives of the subject	44	32.12		
Instructor: introducing background & experience	42	30.66	7	5.11
Icebreaker: doing activities	38	27.74	5	3.65
Getting to know classmates	31	22.63		
Positive attitude of instructor towards students	25	18.25		
Doing a 'nonconventional' class session	22	16.06		
Motivating students	22	16.06		
Beginning subject content	15	10.95	95	69.34
Instructor's advice to pass the subject	15	10.95		
Class takes up full session (2 h)	8	5.84	6	4.38
Explaining instrumental elements (software, etc.)	4	2.92		
Reviewing content (that should be known)	3	2.19		
Doing a test to check initial knowledge	1	0.73	24	17.52
Poor use of class time			20	14.60
Homework assignments			9	6.57
Instructor: poor teaching			8	5.84
Instructor: uncaring, intimidating			7	5.11
Instructor: not being empathetic			6	4.38
Beginning subject content without prior introduction			4	2.92
Instructor: bad attitude			2	1.46
Instructor: not being enthusiastic about the subject			2	1.46

[1] Items have been inferred from findings of two open-ended questions.

3.2. Instructors' and Students' Interactions: A Reciprocal Interview Activity

The reciprocal interview activity was designed to allow the interaction of the whole class with the instructors and vice versa. The mechanics of the reciprocal interview were described briefly in Section 2.3 of this paper. Groups of four students were created and the activity was carried out. One of the instructors sat at the instructor's table writing all the answers given by the different groups of students to the questions raised by the instructors (fifteen minutes were left to prepare the interview, while the interview lasted around fifteen minutes). The final stage of the activity was the instructors answering the different questions asked by the students (eight minutes were left to prepare the interview, while the interview activity lasted twenty minutes).

Once the reciprocal interview was completed, a survey to assess the activity was handed out to all the students to be answered individually to assess students' perceptions of the activity. Again, data about participants were collected to segment the data, in fact the same that was collected in the previous survey: 'university degree that you are studying', 'entrance', 'age', and 'gender'. Yet again, no identification in terms of names was required, resulting in an anonymous form. The survey was structured in four blocs: (1) comfort with approaching the instructor (four items); (2) student comfort with class participation (three items); (3) evaluation of the activity, a reciprocal interview (two items); and (4) ' . . . the activity helped me:' (four items). A space under the tittle 'Any comments?' was left to include students' commentaries. The content handed out to the students was an evolution of the questions surveyed in the Hermann & Foster questionnaire [12].

4. Findings and Results

This section presents the findings obtained once students carried out two activities specifically designed to improve their expectations, engagement, and motivation.

4.1. First Day of Class, 'Likes' and 'Dislikes'

The main findings of the first survey were obtained from the answers to two open-ended questions. Students were asked what they liked and what they disliked, in terms of the class content of the first day and the activities to be carried out during the first session of the subject 'Value Chain and Financial Economics'.

The number of students enrolled in the subject was 164, of which 7 did not participate in any class activity throughout the course. The survey was completed by 137 of them ($M = 19.42$ years old, $SD = 1.32$), who answered the open-ended questions. In terms of gender, there were 33 females (24.09%; $M = 19.09$ years old, $SD = 1.08$) and 104 males (75.91%, $M = 19.52$ years old, $SD = 1.38$). Once the data were collected, responses were normalized without trying to match all of them with the previous taxonomy presented in [53], in order to avoid being conditioned by previous findings. Once the collected data had been classified and reworded, resulting in the items listed in Table 1, the contents were compared with the aforementioned research and then further reworded in a second stage to be able to compare findings. Table 1 shows what students 'liked' and 'disliked' in terms of actions and percentages on the first day of class for the surveyed students. The students' answers shown in Table 1 were standardized to allow adding students' assessments under the identical concepts.

Table 2 shows the actions taken and the percentages of 'likes' and 'dislikes' expressed by the ICT Management engineering students on the first day of class. In all seven engineering programs, the same core subjects are taught in the first academic year. In second year, students take different subjects according to their specific engineering degree program. The distinctiveness of the ICT Management engineering program is that the weight that management subjects have in terms of ECTS (acronym that stands for European Credit Transfer and Accumulation Systems) is much bigger in comparison with the other six ICT engineering programs. The total number of ICT Management engineering students that answered the survey was 15 ($M = 18.93$ years old, $SD = 0.45$), with 3 females (20.00%, $M = 19$ years old, $SD = 0$) and 12 males (80.00%; $M = 18.83$ years old; $SD = 0.57$).

Table 2. First day of class (ICT Management engineering students): 'likes' & 'dislikes'.

Items [1]	'Likes'		'Dislikes'	
	n	**%**	**n**	**%**
General overview, syllabus, content, & expectations	13	86.67		
Describing assessment & grading	10	66.67		
Instructor: introducing background & experience	8	53.33	1	6.67
Getting to know classmates	6	40.00		
Icebreaker: doing activities	5	33.33		
Motivating students	4	26.67		
Utility & objectives of the subject	3	20.00		
Instructor's advice to pass the subject	2	13.33		
Good instructor's attitude towards students	1	6.67		
Doing a 'nonconventional' class session	1	6.67		
Beginning subject content	1	6.67	9	60.00
Reviewing previously acquired content	1	6.67		
Doing a test to check initial knowledge			4	26.67
Poor use of class time			1	6.67
Instructor: uncaring, intimidating			1	6.67
Instructor: bad attitude			1	6.67

[1] Items have been inferred from findings of two open-ended questions.

Table 3 shows the actions and percentages of all ICT engineering students in terms of 'likes' and 'dislikes' on the first day of class, excluding ICT Management engineering students. The total number of students matching this criterion was 122 ($M = 19.48$ years old, $SD = 1.39$), with 30 females (24.59%; $M = 19.10$ years old, $SD = 1.14$) and 92 males (75.41%; $M = 19.60$ years old, $SD = 1.44$).

A Chi-squared analysis compared listed and unlisted frequencies of the ICT Management engineering students to all the other ICT engineering students. No significant differences emerged in the list of 'likes' and 'dislikes' except for the one of the 'likes' items. Chi-squared analysis identified that a greater percentage of the ICT Management engineering students (53.3%) listed 'Instructor: introducing background & experience' as a 'like' than all the other ICT engineering students (27.9%), resulting in an $X^2(1, n = 137) = 4.807$, $p = 0.04$.

Table 3. First day of class (all ICT engineering students, excluding ICT Management engineering students): 'likes' & 'dislikes'.

Items [1]	'Likes'		'Dislikes'	
	n	**%**	**n**	**%**
General overview, syllabus, content, & expectations	94	77.06	16	13.11
Describing assessment & grading	65	53.28	12	9.84
Utility & objectives of the subject	41	33.61		
Instructor: introducing background & experience	34	27.87	6	4.92
Icebreaker: doing activities	33	27.05	5	4.10
Getting to know classmates	25	20.49		
Positive attitude of instructor towards students	24	19.67		
Doing a 'nonconventional' class session	21	17.21		
Motivating students	18	14.75		
Beginning subject content	14	11.48	86	70.49
Instructor's advice to pass the subject	13	10.66		
Class takes up full session (2 h)	8	6.56	6	4.92
Explaining instrumental elements (software, etc.)	4	3.28		
Reviewing content (that should be known)	2	1.64		
Doing a test to check initial knowledge	1	0.82	20	16.39
Poor use of class time			19	15.57
Homework assignments			9	7.38
Instructor: poor teaching			8	6.56
Instructor: uncaring, intimidating			6	4.92
Instructor: not being empathetic			6	4.92
Beginning subject content without introduction			4	3.28
Instructor: not being enthusiastic about the subject			2	1.64
Instructor: bad attitude			1	0.82

[1] Items have been inferred from findings of two open-ended questions.

This qualitative research was planned according to the guidelines presented in previous works [84–89]. As presented in [84], the steps followed were: (1) define the objectives of the research; (2) identify potential respondents; and (3) decide on the methods for collecting

the data and the analysis methodology.. The tool chosen to collect students' preferences about activities to be done during the first day of class followed the same methodology used in [53,63], while questions about the activity were collected and analyzed in line with the study of [12]. The data from the first day of class were collected from students by means of an open-ended questionnaire, a tool that enables students to answer while minimizing possible biases [90]. It should be noted that the sample of surveyed respondents was homogeneous since all of them were students of a second year ICT engineering undergraduate program who took a management subject. Once data about the first day of class were collected from students by means of open-ended questionnaire, the items were analyzed separately by three different researchers to increase the validity of the obtained findings [84].

4.2. Reciprocal Interview Activity

The reciprocal interview activity took place at the final part of the class session once a synthetic presentation of the syllabus was given. A summary of the main results obtained from the interviews when activity was completed is presented in this subsection.

After completing the reciprocal interview activity, a second survey was performed to evaluate the students' assessment of the interview activity. It was the last activity before finishing the first-class session of the mandatory management subject 'Value Chain and Financial Economics' in all ICT engineering programs. Information was extracted from a survey in which students' statements were rated by means of a 5-point Likert scale (ranging from 1—*not at all*—to 5—*a very great extent*—). The results, in terms of mean, median, and standard deviation, are presented in Table 4.

The total number of students that filled the survey with valid results was 131 ($M = 19.33$ years, $SD = 1.56$), and six forms were discarded because data were not completed. In terms of gender, the form was answered by 30 females (22.90%; $M = 19.10$ years, $SD = 1.10$) and 101 males (77.10%; $M = 19.30$ years, $SD = 1.56$).

To assess reliability, the internal consistency of the different sections of the questionnaire was measured by means of the Cronbach's alpha [91,92]. 'Comfort with instructor interaction' had a Cronbach's alpha of 0.72, and removing sequentially each one of the items of the section, the measures were 0.64, 0.74, 0.57 and 0.68, respectively. Further, removing C2 increased the analyzed value, moving from 0.72 to 0.74. Therefore, there was no need to remove any of the items since the whole former section obtained a value greater than 0.7 [92]. 'Student comfort with class participation' had a Cronbach's alpha of 0.69, and removing sequentially the items results were 0.47, 0.62 and 0.76, respectively. Again, by removing an item, S3, the value increased. As in the other case, the result of the second section was nearly 0.7, so consistency was achieved. All the other items, despite been grouped in different sections, were linked to individual concepts. The questionnaire had content validity according to the view of the researchers since it covered the different aspects to be measured once compared with other studies, e.g., [12].

Answers to the questions asked by instructors were compiled carefully. Two instructors asked questions, while another instructor noted down students' responses in front of the whole class. In the same way, students' questions were answered by instructors. All the opinions and statements given by students were analyzed in depth by the instructors once the session was completed. For illustrative purposes, some of the answers to the questions asked by the instructors were about the grading system, continuous assessment activities, key dates, instructors' experience, instructor motivation to teach the subject, and utility of the subject, among others. In addition, some of the students' answers to the instructors' questions were about their expectations for the subject, what they thought they were to be taught, their previous knowledge in management and business, etc.

Table 4. First day of class (ICT engineering students). Reciprocal interview: Data and statistics.

Reciprocal Interview Questionnaire	*M*	*Mdn*	*SD*
Comfort with instructor interaction			
C1. 'Talking to the instructor about assignments'	3.93	4	0.70
C2. 'Asking the instructor questions during class sessions'	3.93	4	0.70
C3. 'Talking to the instructor during office hours'	3.71	4	0.91
C4. 'Emailing the instructor with questions'	3.87	4	1.19
Student comfort with class participation			
S1. 'Participating in group activities during class'	4.20	5	1.01
S2. 'Sharing ideas and opinions during class'	4.00	4	0.76
S3. 'Working group activities outside class hours'	3.67	4	1.23
Evaluation of the activity			
E1. 'Would you recommend other instructors do this activity at the beginning of the term?'	3.80	4	0.86
E2. 'Did this activity seem to be a waste of time?'	1.47	1	0.64
... the activity helped me:			
H1. 'To understand what was expected in class'	4.13	4	0.74
H2. 'To work hard to do well in the class'	4.00	4	0.88
H3. 'To become more comfortable participating in class'	4.13	4	0.74
H4. 'To share concerns with the instructor'	4.00	4	1.07

5. Discussion

This section presents the analysis of the results shown in Section 4 regarding two activities that were carried out on the first day of class of a management subject taught in seven engineering programs.

5.1. What Students 'Like' and What They 'Dislike'

The first part of this research deals with ICT engineering students' opinions on what they prefer to do on the first day of class. The collected data were classified and quantified in terms of percentage of mentioning. All the items sourced from the answers of the whole pack of ICT engineering students are shown in Table 1. Hence, on the top of the 'likes' rank appears, 'General overview, syllabus, content, and expectations', followed by 'Describing assessment & grading', as shown in Table 5. Equally, when thinking about 'dislikes', 'Beginning subject content' is the most common dislike, as shown in Table 6. In addition, both tables include data segmented consistently with Section 4.1.

Table 5. Top ranked 'Likes' clustered by engineering programs.

	AICTep [1]	ICTMep [2]	ICTeMep [3]
General overview, syllabus, content, & expectations	78.10%	86.67%	77.06%
Describing assessment & grading	54.74%	66.67%	53.28%
Utility & objectives of the subject	32.12%	20.00%	33.61%
Instructor: introducing background & experience	30.66%	53.33%	27.87%
Icebreaker: doing activities	27.74%	33.33%	27.05%
Getting to know classmates	22.63%	40.00%	20.49%
Good instructor's attitude towards students	18.25%	6.67%	19.67%
Doing a 'nonconventional' class session	16.06%	6.67%	17.21%
Motivating students	16.06%	26.67%	14.75%

[1] AICTep (All ICT engineering programs); [2] ICTMep (ICT Management engineering program); [3] ICTeMep (ICT excluding Management engineering program).

Table 6. Top ranked 'Dislikes' clustered by engineering programs.

	AICTep [1]	ICTMep [2]	ICTeMep [3]
Beginning subject content	69.34%	60.00%	70.49%
Doing a test to check initial knowledge	17.52%	26.67%	16.39%
Poor use of class time	14.60%	6.67%	15.57%
General overview, syllabus, content, & expectations	11.68%	-	13.11%
Describing assessment & grading	8.76%	-	9.84%

[1] AICTep (All ICT engineering programs); [2] ICTMep (ICT Management engineering program); [3] ICTeMep (ICT excluding Management engineering program).

As in the previously mentioned research works [53,63], the most common 'dislike' is 'Beginning subject content', as seen in Table 6. 'Doing a test to check initial knowledge' was considered an unpopular activity, according to students' perceptions.

Most of the results found in the research (first column of Tables 5 and 6) are consistent with other previous studies [53,63]. Most of the answers to the ranked items are the same, despite changing the numeric value in terms of percentages associated with citing each one of the items by the students. However, some findings included in Table 5 that differ from the aforementioned previous research studies should be highlighted, as follows: (1) 'Utility and objectives of the subject' are highly ranked (32.12%) on the list compared to previous studies, as they were not found in [63] and only reached 7% in [53]. The fact that this element was in the third position and that it did not appear as a 'Dislike' reveals that it was an action highly appreciated by students, and therefore its inclusion in it on the first day of class could be useful to increase the intrinsic motivation of the students. Intrinsic motivation deals with behaving or doing something in a specific way because the individual (i.e., the student) believes that it is inherently pleasant or interesting [93]. (2) 'Motivating students' was selected by 22 students (16.06%) as a positive action to be done by instructors while this item did not appear in previous referenced research works [53,63].

Analyzing the segmented data subsets, some ideas can be highlighted about the previously mentioned items: (1) 'Utility & objectives of the subject' was cited more often by ICT engineering students (33.61%) than by ICT Management engineering students (20%). This difference could be explained by the fact that undergraduates that are enrolled in the latter program are likely to know more about business topics than students that have chosen a purely ICT engineering program. (2) Quite surprisingly, 'Asking for motivation from the instructor' was cited by more ICT Management students (26.67%) than ICT engineering students (14.75%).

5.2. Analizing the Students' Evaluation of the Reciprocal Interview Activity

Data obtained from the reciprocal interview activity were collected from a second survey articulated to assess pronouncements by means of a Likert scale [94], specifically a 5-point Likert scale. Results of the form were grouped in four categories, two related to students' comfort (with approaching the instructor and with class participation), one evaluating the reciprocal interview activity, and the last one evaluating four statements related to potential benefits of the first day activity that the student actually performed.

All the items related to the label 'comfort with instructor interaction' received a high score value. Within this tag, the statement that received a lower mean value (3.71) was 'talking with the instructor during office hours'. All the other items received values quite close to four. In fact, students asked a lot of questions about the continuous assessment of the subject. When analyzing the elements associated with 'student comfort with class participation', two of the statements were also highly assessed. Again, the item with lower values (and again with the higher variance) was the one related with an action to be done outside class hours, in other words, 'working with their peers outside class hours'. Both low values may suggest that students are initially more oriented to perform their learning activities within class hours. Further research should be done in these specific items to shed light on both statements.

The third section of the form was focused on the assessment of the reciprocal interview activity. Two sentences were provided to check how students assessed the activity, one in positive while the other one is formulated in negative. Both results were consistent, giving good feedback about the activity. Here again, further research to compare the results generated by different first day activities should be carried out. In the framework of the NLC [76,77], a list of available activities to be done in the specific context of engineering and management subjects during the welcoming should be made. This list can be completed after an analysis of the evaluation and effectivity of the potential activities by means of student surveys. It seems that the reciprocal interview activity, according to the results obtained in the survey, worked very well considering the students' opinions, in line with other research works [12].

The last section of the questionnaire was designed to check what specific issues had emerged from the reciprocal interview activity. Understanding expectations, sharing concerns with instructors, and becoming comfortable with their participation in class were very well valuated (all equal to or greater than four).

5.3. Practical Implications of the Findings

Once the main findings of the research are presented, different practical implications emerge. The mere fact that students realize that their opinions are heard and considered increases their engagement [41]. Hence, both activities performed on the first day of class that give voice to the students can enhance their engagement. In addition, the information collected through the answers of both activities is very valuable feedback for the instructors. Moreover, in the case of implementing some students' opinions, engagement can increase since they perceive that their ideas have been valued and applied [41]. Another option that may enhance engagement is to promote the use of new technologies by students [95], and once again, asking students about how they perceive their experience using technology [82] may be crucial. Finally, promoting peer-to-peer interaction also may increase

engagement [96]. In fact, most of these actions took place in the context of this research through both activities that were carried out the first day of class.

5.4. Limitations, Restrictions and Future Research Directions

A first limitation of both studies, the empirical survey and the assessment questionnaire about the reciprocal interview activity, was that surveyed students were restricted to those taking a second-year ICT engineering subject. Consequently, even though students from seven different ICT specialties were asked, which facilitates the comparison of student's perceptions across all the diverse ICT engineering programs, the sample was limited to second-year students. However, and to cope with this limitation, replicating this research work in other subjects has already been already scheduled. A second limitation related to the first day of class activity was that only one option was chosen, a reciprocal interview. Some of the other activities listed in this paper could be implemented in other subjects and in different academic courses to verify and compare results between the different first day activities. A third limitation was that students were invited to answer the survey with short sentences. This option was chosen to force students to first think and then write synthesized ideas. However, this option could lead to limiting the depth of their opinions. In fact, we are going to repeat these activities in the next academic year in different subjects, and we are planning to set a new limit (around twenty words).

Future research works should aim at properly developing the 'New Learning Concept' that is currently being implemented at La Salle URL [76,77]. Firstly, it would be wise to replicate the study of the 'likes and dislikes' of the first day of class in different subjects. Hence, third and fourth-year ICT engineering students should be surveyed in the context of subjects taken for all ICT engineering students to check if findings are similar in terms of items and its percentages. The study should be carried out in the context of engineering subjects and in the framework of business subjects. Secondly, and along the same line, preferences about 'what likes and what dislikes' could be done in the context of ICT master students to analyze eventual differences in students' preferences that may exist between undergraduate and master programs. Finally, besides the reciprocal interview, some other first day activities could be implemented to check its potential success in a technological context.

6. Conclusions

The main contribution of the empirical studies presented in this paper was to shed light about the preferred actions to be done on the first day of class in the specific framework of ICT engineering programs through collecting students' opinions. In fact, asking students preferences and carrying out an activity that promotes their participation is a powerful way to establish the tone of a subject, which impacts engagement and motivation. Findings were quite consistent with previous research in terms of the list of preferences, despite some differences in ranking and percentages. An item related to requiring 'motivating students' by instructors appears recurrently as one of the students' requests. Further, once a specific first day activity was implemented, by means of a reciprocal interview between students and instructors, students' perception about the activity were surveyed. According to the results of the survey based on those interviews, the activity was very positively assessed by students. These findings, results and experiences are very valuable in the framework of the NLC, specifically in the Welcoming stage, because the outcomes obtained from this research will help to develop in a tangible way the new learning strategy that is being implemented at this moment.

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