CORRELATION AMONG STUDENTS' PROFILE AND DISTANCE EDUCATIONAL PROGRAMS

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Abstract

Technology is increasingly developing and influencing the context and content of distance education. Technology has the capability to transform and alter distance education. These changes lead academicians to essentially reinvent their roles. Indeed, in this new environment instructors are acting as facilitators and it is fair to mention that their role is also to lead the students. On the other hand, students are also faced with a new educational reality. Students are no longer located within a physical classroom but in a virtual one. The goal of the current paper focuses on identifying how the students' profile influences the interaction with the distance learning environment. In order to understand the relationship between students and distance education a questionnaire survey was designed and implemented. Six hundred and fourty-six students participated in the survey and provided their profiles and distance learning experience along with their learning preferences. The survey was designed and implemented through Google forms. One hundred and twenty – four questions were provided to the participants. The findings of the current research indicate that students' profiles influence their experience with distance learning environments. One of the attributes associated with the students' behavior is the marital status. Single students tend to keep their camera closed while the opposite is true for married students. Married students consider distance learning as a method of education which is most efficient, while single students consider distance learning as inefficient to average efficient. Other factors as well influence the experience and performance of the distance learning environment.

Keywords: University Students' Characteristics, Student Preferences, Questionnaire Survey, Distance Learning, Correlation Analysis.

1   INTRODUCTION

In recent years the distance education, in the form of online learning or e-learning, has become a popular substitute for traditional education. In fact, distance educational programs are capturing a wider share of higher education across the world. Some of the main reasons for this rapid increase in popularity of online education are the flexibility and convenience it offers, the wide variety of courses and programs available online, the easy access to high-quality education and the personalised learning environment that it can offer. The subject of distance educational programs for higher education has been extensively addressed in the international literature over the past decades.

The developments in technology have equipped educators with a considerable variety of electronic tools to facilitate them in transmitting knowledge to others. Raymond [1] presents the kind of technology in higher education appropriate for the delivery of distance education. According to his study, within the application of these electronic tools in order to facilitate distance education, the instructor is no longer the promoter of knowledge to students as in the traditional classroom setting, but he acts more as an "information navigator".

The aim of the exploratory study of Brigham [2] is to investigate the course development process within a specific distance education context. The study seeks to identify factors and relationships among factors facilitating and impeding the development of distance education courses at Syracuse University, a large, private university in Central New York State. Through interviews with course developers and faculty authors, six factors associated with the success of the course development process were identified, namely: course definition, faculty perception of student abilities, textbook selection, the extent of faculty/developer conflict, faculty flexibility, and faculty/developer working relationships. According to this study, the factors related to course success seem highly interrelated and difficult to separate.

Boticario and Gaudioso [3] focus on the description of the objectives, the structure and the functionality of an interactive system capable of adapting to the information and communication needs of the different types of user. The application is the outcome of an effective combination of techniques used in intelligent tutoring systems, adaptive hypermedia programs and learning apprentice systems for software personalization. The specific research initiative has presented that personalized interaction with users/students can be successful in a transparent and efficient manner through the Web. The research is based on various combinations of classifiers in the generalization tasks, filtering of information on the elements used, automatic extension of the system knowledge base, individual and collaborative learning for the user models and learning of the applications which are significant for the user.

Onay [4] uses the Informing Science Framework to present the institutional system established at METU (Middle East Technical University) in Turkey, which has initiated Internet-based learning through its METU-Online project. The objective of this paper is the description of the activities involved in implementing this project in relation to the phases of the systems development life cycle, as well as an appraisal of the impact of the project. This approach constitutes a template that may be used by other universities embarking on such a mission. The degree of prepackaging in the course, the size of the class, the mode of delivery and the degree of homogeneity among students taking the course are suggested in this study as factors affecting success in this new informing environment.

Serdyukov and Serdyukova [5] highlight in their paper the significance of time in online learning, both for students and instructors; they present some research data regarding time investment in teaching and learning and offer practical recommendations for making online college education more time-efficient. This research studies time expenses in online learning of both students and instructors and identifies students' issues with the use of their learning time. The authors conclude that online education offers a great potential for increasing time efficiency of learning, which may lead to better learning outcomes and considerable savings. The findings of the study show that an online course is 2.49 times more time-efficient for the students than a comparable onsite course. Additionally, it was found that students' self-efficacy is positively related to achievement.

Kauffman [6] investigates a broad range of factors that affect performance and satisfaction within the online learning environment for adult learners, including learning outcomes, instructional design and learner characteristics. The implications for online learning pertinent to administrators, instructors, course designers and students are also presented. Identifying particular characteristics that contribute to online success versus failure may aid in predicting possible learning outcomes and save students from enrolling in online courses if this type of learning environment is not appropriate for them. According to the author, within online learning more responsibility is placed on the learner, especially in asynchronous courses, while adequate self-regulation skills are required.

Finally, De Notaris et al. [7] focus their research interest on the possible forms of integration of new technologies aimed at achieving greater student involvement in online learning environments, and specifically on a form of hybridization that promises to become among the most frequent in the near future, that of remote or virtual classes. According to this study, long non-interactive lessons tend to make the student lose attention, while the use of ad hoc tools can facilitate the realization of flipped classrooms online, where the live lesson becomes an opportunity to involve students in the production of materials and group work. Moreover, the design of the lesson must take into account the expected number and type of students, the configuration of the environment and the tools available, so that the choice of a remote classroom tool becomes a central aspect for the teacher who will use it.

On the other hand, the current study aims at identifying how the profile of the students affects their interaction with the distance learning environment. To that end, a questionnaire survey of one hundred and twenty – four questions was designed and implemented, in order to investigate the relationship between students and distance education. There were six hundred and forty-six students who participated in the survey, providing information regarding their profiles and their distance learning experience, as well as their learning preferences. Regarding the structure of this paper, Section 2 contains a description of the methodology that was used in the survey, while Section 3 includes the presentation of the results of the correlation analysis conducted. Finally, Section 4 includes the conclusions of the study.

2   METHODOLOGY

The current study aims at introducing a number of learning styles and then defining the ones that are preferred by Greek Students. The research has taken place during 2023 to collect data regarding university students and distance education within four participating countries, which include: Greece,

Italy, Serbia and Romania. Six universities were participating in the current research. In order to collect relevant information a structured questionnaire was designed, and a following survey took place. The questionnaire responses of the University students are equal to 646. The answers were appropriately processed and corresponding values were assigned to the original variable values to create a database including both quantitative and qualitative data. The questions that the students answered were equal to 124. The survey was disseminated mainly through email but also interviews have taken place. The languages of the survey included: Greek, English, Italian, Serbian.

The platforms of the questionnaire were google forms and limesurvey. The questionnaire received the approvement of the Aristotle University of Thessaloniki Research Ethics Committee and succeeded in collecting data regarding distance education experience, learning styles of the students, and the participants' personality characteristics. The questionnaire includes as mentioned above 124 questions, and It included the following discrete parts:

- Students' Attributes

- Students' Distance Education Experience

- Students' Preferred Learning Styles

- Fellow Students' Preferred Learning Styles

- Preferred teaching style of Instructors

- Students' Personality

The questionnaire for the students was synthesized for the purpose of the current research needs and requirements. In the following passage, an attempt will be made to explain the structure of the questionnaire survey. An initial part was designed to capture / record the characteristics of the students (general attributes – profile). Then a number of questions were added to evaluate distance education experience. The next step was to present specific learning styles. These learning styles originated from the work of Sternberg and Zhang [8], [9] and then a complimentary approach by Arbabisarjou et al. [10]. In this context, Sternberg and Zhang introduced [9]:

- Three functions of government: legislative, executive, and judicial

- Four different forms of mental self-government in the theory, that include: monarchic, hierarchic, oligarchic, and anarchic

- Two levels of mental self-government: local and global

- Two scopes of mental self-government: internal and external

- Two types of learning of mental self-government: liberal and conservative

Then follows a number of additional statements based on VARK Learning Styles by Arbabisarjou et al. [10], that included: Kinesthetic, Auditory, Read/Write, Visual and Multiple styles. Vark's four learning styles include: visual, aural, reading, writing and kinesthetic - motor. Finally, the personality questionnaire based on the big five personality traits and facets measures the personality of the participant [11]. An SPSS Database was produced. Corresponding parameters were created for the data to be inserted in the SPSS database. The sample of the Greek University Students is equal to 646 responses. The sample consists of 48,3% female participants and almost 51,4% were male participants and a number of participants didn't provide an answer (0,3%). Regarding the marital status 36,4% are married, while 60,5% are single. As far as the occupational status is concerned, students were the 34,5% of the sample, unemployed were 3,4%, employed in Private Sector 36,2% and finally employed In Public Sector were 25,9%.Students were studying at State Government University 71,1%, while 26,6% are in Private Colleges. As far as the level of the computer expertise of the participating students is concerned, the following Figure 1 clearly presents that an average to good knowledge exists:
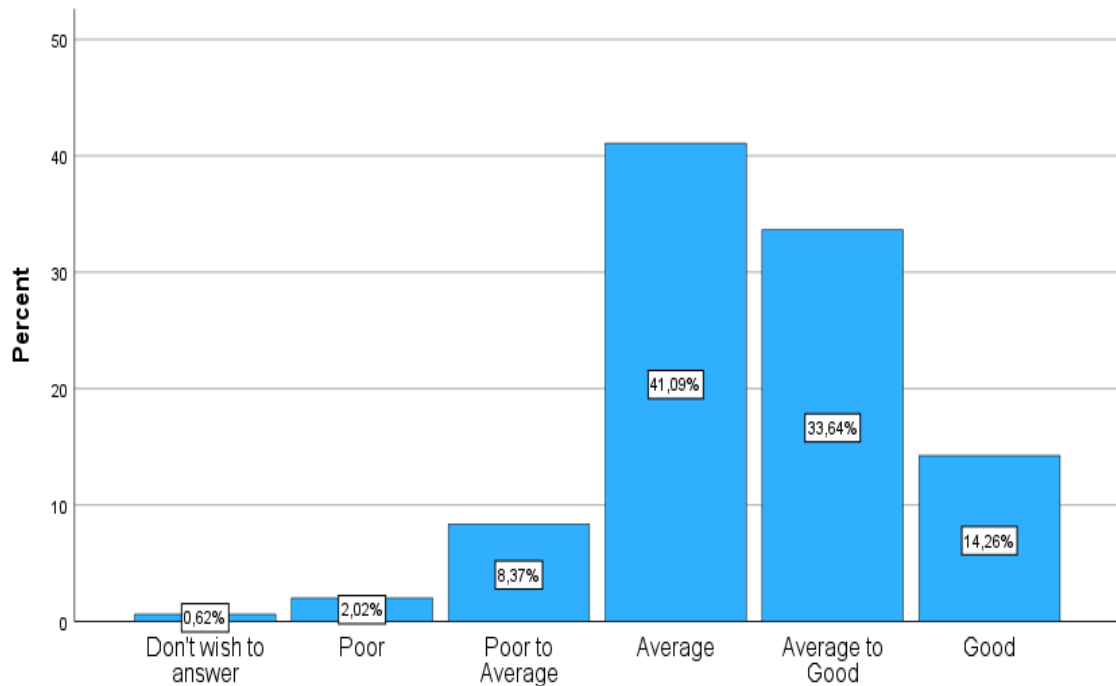
Figure 1. Level of Computer Expertise

In the following sections, correlation analysis has taken place and the respective results are presented and analyzed.

3   RESULTS

The specific research managed to identify a number of interesting correlations among students' profile and their preferred learning styles. A crosstab analysis was selected with the aid of SPSS 29.

In order to identify the relevant correlation, two criteria were selected:

- Asymptotic significance was required to be less than 0.05
- Adjusted residual was required to be greater than 1.96.

What follows is the presentation of a number of the most interesting correlations that were recognized within the research, in the following Tables 1-5.

Table 1. Correlation among Students' gender and learning preferences - Part 1

Students' Gender	I can understand the material better through listening and oral teaching methods			I have preference for tasks, projects, and situations that lend themselves to great flexibility of approaches, and to trying anything when, where, and how I please (work asystematic or even antisystematic).		
AS (Asymptotic Significance), AR (Adjusted Residual), Response	**AS**	**AR**	**Response**	**AS**	**AR**	**Response**
Female Students respond with	<,001	3,4 / 2,0	Slightly / Moderately	-	-	-
Male Students respond with	<,001	4,2	Very	0,051	2,0	Moderately

As shown in the above Table 1, students' gender is significantly correlated with the learning preference: "I can understand the material better through listening and oral teaching methods". More specifically,

female students correlate with the response "Slightly / Moderately" to the preference of this learning style. Correspondingly, male students correlate with the response "Very" to the specific preference.

On the other hand, students' gender is correlated, but less significantly, with the learning preference "for tasks, projects, and situations that lend themselves to great flexibility of approaches, and to trying anything when, where, and how I please (work asystematic or even antisystematic)", but only regarding male students, who correlate to some extent with the response "Moderately" to this preference.

Table 2. Correlation among Students' gender and learning preferences - Part 2.

Students' Gender	I have a preference for tasks, projects, and situations that allow working with others in a group or interacting with others at different stages of progress. I do not enjoy working alone			I have a preference for tasks, projects, and situations that involve unfamiliarity, going beyond existing rules or procedures, and maximization of change. I like new challenges and I thrive on ambiguity		
AS (Asymptotic Significance), AR (Adjusted Residual), Response	*AS*	*AR*	*Response*	*AS*	*AR*	*Response*
Female Students respond with	0,042	2,2	Not at all	0,024	3,0	Slightly
Male Students respond with	0,042	2,2 / 2,1	Very / Completely	0,024	2,8	Very

As shown in Table 2, students' gender is also correlated with the learning preference "for tasks, projects, and situations that allow working with others in a group or interacting with others at different stages of progress. I do not enjoy working alone". Indeed, it is very interesting that female students correlate with the response "Not at all" to the preference of this learning style, in contrast to the male students who correlate with the response "Very / Completely" to the specific preference.

Another notable difference between the preferences of the two genders of students is related to their responses to the preference "for tasks, projects, and situations that involve unfamiliarity, going beyond existing rules or procedures, and maximization of change. I like new challenges and I thrive on ambiguity". Regarding this, female students correlate with the response "Slightly", while male students correlate with the response "Very".

Table 3. Correlation among Students' marital status and learning preferences.

Students' Marital Status	How efficient do you consider distance learning as a method of education			If you have attended at least one online course do you usually keep your camera on or off		
AS (Asymptotic Significance), AR (Adjusted Residual), Response	*AS*	*AR*	*Response*	*AS*	*AR*	*Response*
MARRIED	0,005	2,9	Most Efficient	0,002	3,8	Camera On
SINGLE	0,005	2,9	Inefficient to Average Efficient	0,002	4,0	Camera Off

Table 3 indicates that students' marital status is significantly correlated with the question: "How efficient do you consider distance learning as a method of education". It is particularly interesting that married students correlate with the response "Most Efficient" to this question, while single students correlate with the response "Inefficient to Average Efficient".

Correspondingly, marital status is also significantly correlated with the question: "If you have attended at least one online course do you usually keep your camera on or off". More specifically, married students correlate with the response "Camera On", while single students, on the contrary, correlate with the response "Camera Off".

Table 4. Correlation among Students' Level of Education at present and learning preferences.

Students' Level of Education at present	I have preference for tasks, projects, and situations that allow creation of a hierarchy of goals to fulfill. I will often make lists, and sometimes even lists of lists.			I have preference for tasks, projects, and situations that allow working with competing approaches, with multiple aspects or goals that are equally important		
AS (Asymptotic Significance), AR (Adjusted Residual), Response	AS	AR	Response	AS	AR	Response
Post Doctoral Studies	0,024	2,6 / 2,5	Not at All / Slightly	0,003	3	Completely
PhD	0,024	1,9	Completely	0,003	3	Completely
Master of Science	0,024	2,0	Completely	-	-	-
Undergraduate	0,024	-	-	0,003	2,3	Slightly

Another interesting correlation extracted from the research is the one among students' level of education at present and two specific learning preferences, which are presented in Table 4. As regards the learning preference "for tasks, projects, and situations that allow creation of a hierarchy of goals to fulfill. I will often make lists, and sometimes even lists of lists", students with an education level of Post Doctoral Studies tend to correlate with the response "Not at All / Slightly", whereas students with an education level of PhD or Master of Science correlate with the response "Completely".

On the other hand, regarding the learning preference "for tasks, projects, and situations that allow working with competing approaches, with multiple aspects or goals that are equally important", students with an education level of Post Doctoral Studies and students with a level of PhD correlate significantly with the response "Completely". On the contrary, undergraduate students correlate significantly with the response "Slightly" to the preference of this learning style.

Table 5. Correlation among Students' Level of Education at present and learning preferences.

Students' Occupational Status	I can better learn the teaching materials through taking notes and reading the written contexts and texts		
AS (Asymptotic Significance), AR (Adjusted Residual), Response	AS	AR	Response
Student	-	-	-
Unemployed	0,034	3,0	Completely
Employed in Private Sector	-	-	-
Employed In Public Sector	0,034	1,9	Very

Additionally, according to Table 5, students' occupational status is correlated with the learning preference: "I can better learn the teaching materials through taking notes and reading the written

contexts and texts". More specifically, unemployed students correlate with the response "Completely" to the preference of this learning style. Correspondingly, students employed in Public Sector correlate with the response "Very" to the specific learning preference.

4   CONCLUSIONS

The aim of the present study was to investigate how the profile of students who participate in distance educational programs can influence their interaction with the specific learning environment. For this purpose, a questionnaire survey was carried out. Six hundred and forty-six students from four countries (Greece, Romania, Italy, Serbia), and from six universities in total, participated in this research. The survey was designed and implemented in 2023, through a structured questionnaire, with the aid of Google forms. More specifically, the participants provided sufficient information about their profile and their distance learning experience, while they responded to various specialized questions regarding their learning preferences in the context of distance educational programs.

The most important objective of the current research was to identify the correlations among students' profile and their precise learning preferences in distance education. In fact, through a Crosstab analysis that was conducted with the aid of SPSS 29, a large number of interesting correlations among students' profile and their preferred learning styles were identified. The most notable of them were the correlations among students' gender and some specific learning preferences of the students, regarding the type of the preferred teaching methods, as well as the type of the preferred tasks, projects, and situations within distance education. In particular, four of these correlations concerning students' gender were presented in the context of this paper.

There were also noteworthy correlations identified and presented in this study, among the students' learning preferences and other attributes of them such as their marital status, their level of education at present and their occupational status. Some interesting conclusions were drawn from these correlations, such as the fact that married students consider distance learning as a method of education which is most efficient, while single students consider distance learning as inefficient to average efficient. Another notable finding of the research is that single students tend to keep their camera closed, while the opposite seems to be true for married students.

The ultimate goal of this research is to capitalize on the findings regarding the identified correlations, so that distance education programs can be organized more efficiently, more targeted to the needs of the participants, and they can be more attractive to the users. These findings could be utilized and incorporated in the future by universities, institutions and organizations to better organize the distance educational process that they provide.

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