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SELF-PERCEPTION OF INFORMATION TECHNOLOGY SKILLS OF PRE-SERVICE TEACHERS FROM THE POINT OF VIEW OF THEIR YEAR IN THE PROGRAM

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Abstract

We present the results and analysis of a survey on the information technology skills of prospective teachers of different teaching programs, having different paths in their programs. These students belong to the Faculty of Pedagogy of Dalat University (Vietnam) and are intended to become teachers in secondary and high schools. These students have no academic IT training in their curriculum, so the objectives of this survey were (1) to find out their self-perception about the IT skills they use almost every day but without a specific course, and (2) to

identify specific profiles according to the different academic progress and to make a comparison between them. The survey was conducted through the Internet, and the answers were anonymous. The questions were focused on their self-perception of their skills regarding media (images, sounds, and videos) and website editing. Students originated from different programs (biology, chemistry, English, History, Literature, maths, and physics) and the representation according to their academic progress (from the first year to the fourth and last year in their bachelor's) is rather balanced, except for the 4th year: first year: 15 answers, second year: 18, third year: 14, and fourth year: 23. The survey allowed us to identify the global self-perception for all the students and for each one of the 4 years of their bachelor's, notwithstanding the program to which they belong.

Keywords:

IT Skills, Students' IT Skills, Prospective Teachers Training, Multimedia Processing

1. Introduction

The necessity for prospective teachers to attain competency in information technology (IT) is well-established (Efe, 2011). This aligns with the assertion that student teachers must be equipped to integrate information and communication technology (ICT) into their future pedagogy (Sang et al., 2010). Consequently, a variety of training models have been developed for this purpose (Bidariana et al., 2011; Ainley et al., 2008). However, the relevance of IT to educational performance and its broader implications are not universally accepted and continue to be questioned (CERI/OECD, 2010). Notwithstanding this debate, innovative pedagogical approaches utilising IT are being experienced worldwide (Ottestad, 2010).

A previous analysis of the results of the survey presented in this paper, from another point of view, is described in [7], where the emphasis is made on the self-perception of information technology skills of prospective teachers from the point of view of their programs. In the present paper, the emphasis is placed on the same self-perception but from the point of view of the academic progress of the students, i.e., in which year, within their programs, the students are studying at the time of the survey. In order to make this paper self-contained, some descriptive information is taken from [7].

It seems obvious nowadays that teachers should have the necessary competencies to be familiar with information technology (IT) in order to use it for their planning, their class management, and the production of their own teaching material. Future teachers need to be introduced to IT during their training to allow them their use it with confidence. [8] describes “how experiences of learning with ICT in pedagogically meaningful ways can affect pre-service

teachers' intentions to use ICT for teaching and learning". As stated in [9], "Teachers need to be competent in integrating ICT into education to support the teaching and learning process"

The authors in [10] report findings of a study on teacher-training programs indicating that "their teaching skills were increased—not only for using ICT in researching teaching materials and preparing for instruction but also in class instruction" even if "their skills used in teaching students how to use ICT in class did not increase".

Teacher's skills are more important than the ICT infrastructure in the schools and the classrooms and some research studies indicate "that the availability of educational software, teacher ICT training, collaboration among teachers, perceived self-efficacy, and teaching concepts influence classroom ICT use" [11], that is why it necessary to focus on the training of pre-service teachers.

"What happens with prospective teachers who don't have specific courses to develop their IT skills? What could be their IT skills in this particular situation?" [7]. This article explores such a situation and presents the results of a survey conducted among the students of the Faculty of Pedagogy of Dalat University, a faculty comprising 7 bachelor programs dedicated to secondary and high school pre-service teachers (Mathematics, Physics, Chemistry, Biology, Literature, History, and English).

For the moment, there is no course on information and communications technology for teaching, such as, for example, the one described in [12], aiming at developing application software skills for prospective teachers of different programs. Before offering students an optional IT activity, a survey was conducted to get an idea of their self-perception of their mastery of processing multimedia objects and website editing. The results of this survey are presented in this paper, and in order to try to establish different profiles, the eventual discussion is limited to the comparison between the academic progress of the students.

This article is organized as follows: after the present introduction, section 2 describes the global results of the survey; section 3 presents the detailed results according to the academic progress (the pathing of the students); section 4 concludes the paper.

2. Global Results of the Survey

The survey was conducted through the Internet during the first week of November 2016. 72

answers were received, of which 70 were valid. Students originated from different programs (biology, chemistry, English, History, Literature, math, and physics) and the representation according to their academic progress (from the first year to the fourth and last year in their bachelor's) is rather balanced, except for the 4th year: first year: 15 answers, second year: 18, third year: 14, and fourth year: 23 (see Figure 1). In [7] one can find more details about the survey since that paper describes the survey and discusses the results from the point of view of the programs to which the students belong.

According to many participants, one of the main reasons for the higher participation of the students in the 4th year (last year in their bachelor programs) was more oriented towards improving their English since the seminar was given in English and was focused on the active participation of the students [7].

The questions of the survey were focused on their skills related to media processing (images, sounds, and videos) and website editing. For each one of these items, the answers may be: very good, good, average or none.

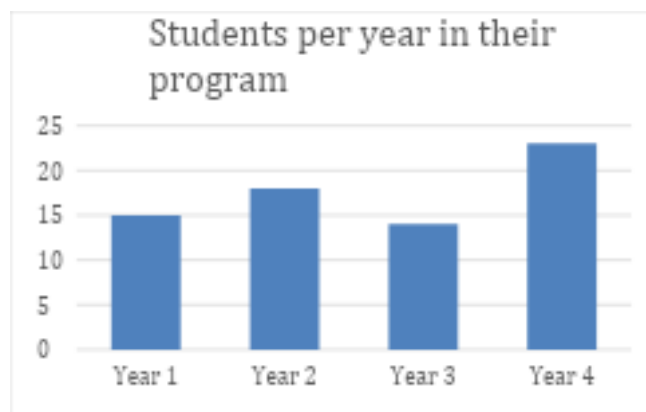


Figure 1. *Distribution According to the Programs*

This kind of survey may answer the question: “Do the students in different academic progress (their pathing) have the same self-perception of their IT skills?” or “Do they

have different profiles depending on their pathing”?

Table 1. Number of Student Answers for all the Programs

4 years	Image	Sound	Video	Website	Total
Very good	5	7	5	1	18
Good	40	29	26	16	111
Average	23	30	34	32	119
None	2	4	5	21	32
	70	70	70	70	

Figure 2 below shows the student answers for all 4 different years.

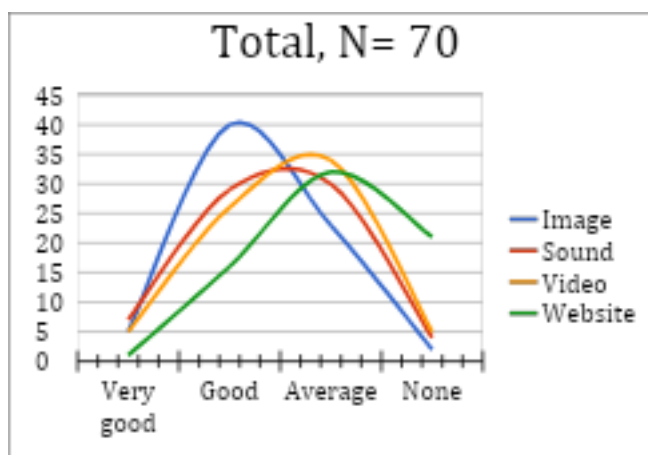


Figure 2. Student Answers from all 4 Different Academic Progresses

It appears that few students have skills in website editing, whereas many of them have quite good image editing skills. “Since the students had no course on IT, it seems that their IT extracurricular knowledge is oriented towards the processing of multimedia objects and the consumption of information on the web rather than the production of content for the web” [7].

The image, sound, and video processing skills generally obey the normal (or Gaussian) distribution. Nevertheless, the number of students having good - or very good - image processing skills (over 64%) is higher than the two other media, probably due to the extensive use of smartphones to take pictures and to add some effects before publishing them on social media.

In order to combine the different answers, a specific weight has been given to each kind of possible answer, with the following meaning: 3 = very good, 2 = good, 1 = average, and 0 = none. The total score for each student ranges between 0 (no skill at all) and 12 (very good skills everywhere). Table 2 shows the mean and standard deviation calculated for each year and for the 4 years based on the scores of the students. We can see that the students of the 4th year have the highest mean (6.17), whereas the students of the other years have a very similar mean. The students of the 2nd year have the lowest standard deviation (1.65), which means that they have the most homogeneous profile, whereas the students of the other years have a very similar standard deviation. It appears that the students of the 1st and the 3rd years have, from this point of view, a similar global profile.

Table 2. *Mean and Standard Deviation*

Year	Mean	STDEV
1	5.50	2.62
2	5.39	1.65
3	5.50	2.41
4	6.17	2.39
4 years	5.7	2.25

These weights have been used to show the distribution of the scores of all the students using a scatter chart (see Figure 3). This chart shows that 2 students think that they have no skill at all (score = 0) and no one has a maximum score of 12. Nevertheless, one student has 11 and another on 10. The majority of all the other scores are comprised between 4 and 8.

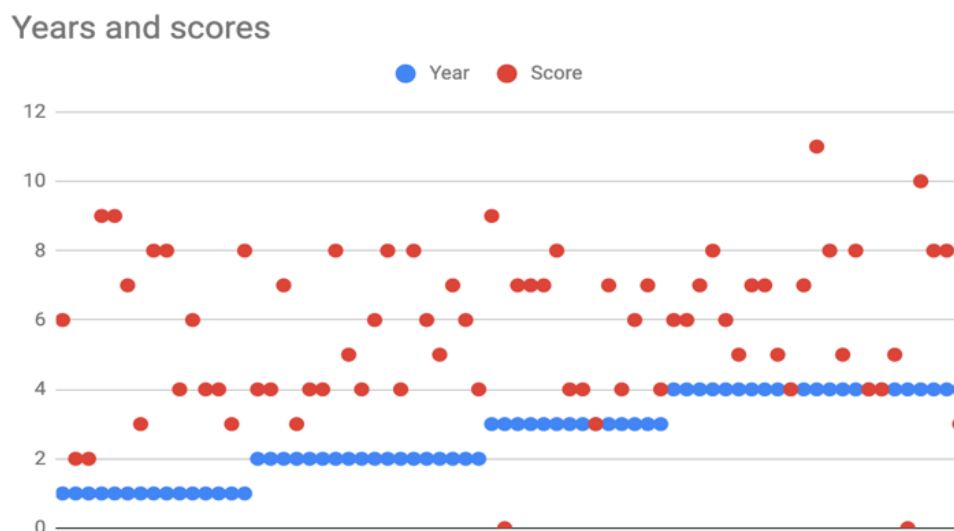


Figure 3. Student Scores Represented using a Scatter Chart

The next section presents the detailed results related to the different years within the academic progress of the 4 years of the bachelor's programs

3. Detailed Results by Year in the Programs

Figure 4 and Table 3 show the answers from the students during their 1st year of their bachelor's. The answers related to the image, sound, and video processing skills obey the normal (or Gaussian) distribution. On the one hand, the results show that the majority of the students of this year have good or very good image processing skills (60%), which is quite similar to the global result (i.e., 64%) and, on the other hand, they have fewer website editing skills (53% versus 69% for good and average answers).

The sound and image editing skills are very similar for the students in the 1st year.

Table 3. 1st Year Student Answers

Year 1	Image	Sound	Video	Website	Total
Very good	3	2	2	0	7
Good	6	7	5	2	20
Average	6	5	5	6	22
None	0	1	3	7	11

	15	15	15	15	
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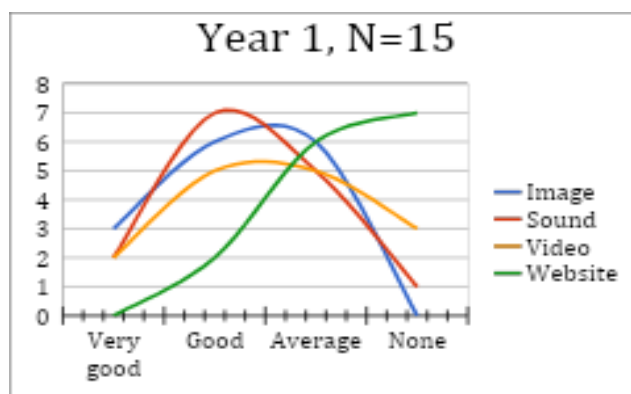


Figure 4. 1st-Year Student Answers

Figure 5 and Table 4 show the answers from the students in their 2nd year of their bachelor's. The answers related to all of the media and the website, editing skills obey the normal (or Gaussian) distribution, which is quite different from the global result. This is due to the website editing curve. The results also show that none of these students thinks of having very good skills in any of the media editing. This result is very particular to this set of students and is absent in all the other sets of students. 100% of students think that they have good or average IT skills in image and video editing.

Table 4. 2nd year student answers

Year 2	Image	Sound	Video	Website	Total
Very good	0	0	0	0	0
Good	11	7	5	6	29
Average	7	10	13	9	39
None	0	1	0	3	4
	18	18	18	18	

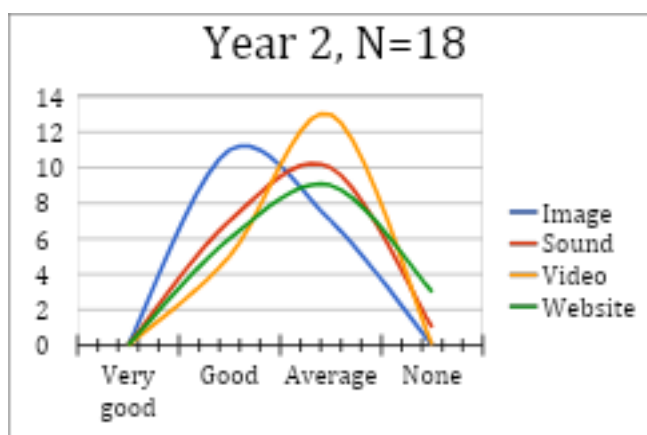


Figure 5. 2nd-Year Student Answers

Figure 6 and Table 5 show the answers from the students within the 3rd year of their bachelor's.

These students have the highest skills in image editing (71% for very good and good), the same skills for sound and video editing. Their website editing profile is similar to the ones of the 1st year.

Table 5. 3rd Year Student Answers

Year 3	Image	Sound	Video	Website	Total
Very good	1	2	2	0	5
Good	9	5	5	1	20
Average	3	6	6	7	22
None	1	1	1	6	9
	14	14	14	14	

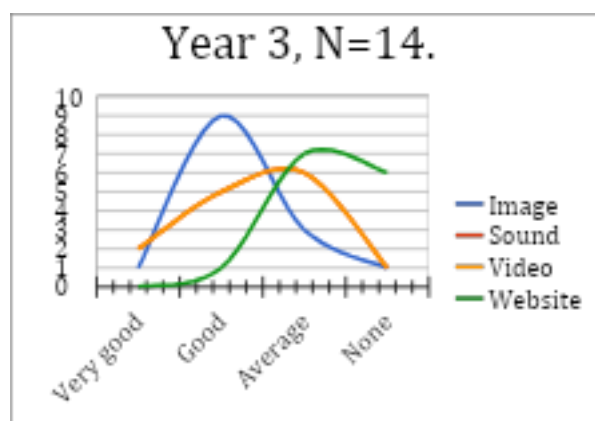


Figure 6. 3rd-Year Student Answers (Sound and Video have the Same Values)

Figure 7 and Table 6 show the answers from the students in their 4th year of their bachelor's. The answers related to all of the media, the website, and editing skills obey the normal (or Gaussian) distribution, which is quite different from the global result and similar to the students of the 2nd year. They have the highest skills in video editing (52% for very good and good). They also have the largest gap between the highest score (11) and the lowest score (0) using the weights described in Section 2.

Table 6. 4th-year student answers

Year 4	Image	Sound	Video	Website	Total
Very good	1	3	1	1	6
Good	14	10	11	7	42
Average	7	9	10	10	36
None	1	1	1	5	8
	23	23	23	23	

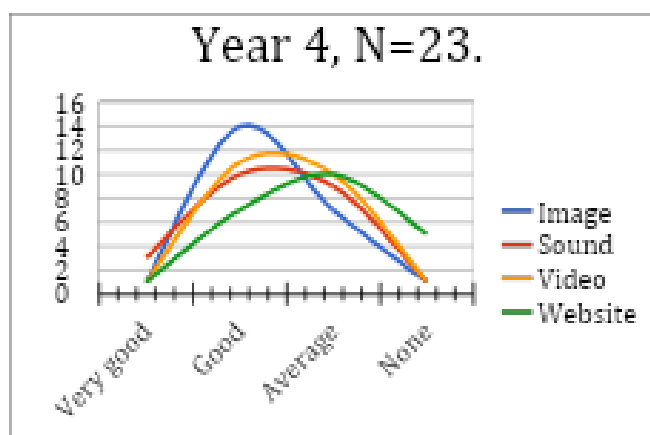


Figure 7. 4th-year Student Answers

4. Conclusion

This paper presented the results of a survey on the IT skills of prospective teachers of the faculty of pedagogy at Dalat University in Vietnam. The questions of the survey were focused on media editing (images, sounds, and videos) and website editing from the point of view of their academic progress in their bachelor of 4 years. As in [7], the results show that the IT skills of the students are not homogeneous from one year to another. Nevertheless, it is interesting to note that the profiles of the students of the odd years (1st and 3rd) are quite similar. The same conclusion could be drawn for the even years.

These initial results will be supplemented by future analyses using the same survey during the coming years, allowing the analysis of the evolution over time.

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