

Self-Perception on Information Technology Skills of Pre-Service Teachers from the Point of View of Their Programs

Moncef Bari and Phu C. Hoa

ABSTRACT

This article presents the initial results of a survey on the IT skills of prospective teachers of different teaching programs of the faculty of pedagogy of Dalat university (Vietnam). 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 skills IT they use almost every day but without a specific course, and (2) to identify specific profiles according to the different programs and to make a comparison between them. The survey has been conducted through the Internet, using Google Forms, and the responses were anonymous. The questions were focused on their self-perception on their skills regarding media processing (images, sounds, and videos) and website creation. 72 responses were received among which 70 were valid. The results show that there is not a significant difference between the student's self-perception skills according to their programs whereas there are differences according to the kind of the media processing skills.

Keywords: IT Skills, Pre-Service Teachers' Skills, Pre-Service Teachers Training, Self-Perception Skills

Published Online: May 28, 2022

ISSN: 2736-4534

DOI : 10.24018/ejedu.2022.3.3.334

M. Bari*

Faculty of education, Université du Québec à Montréal, Canada.

(e-mail: bari.moncef@uqam.ca)

P. C. Hoa

Faculty of Pedagogy, Dalat University, Dalat, Vietnam.

(e-mail: hoapc@dlu.edu.vn)

**Corresponding Author*

I. INTRODUCTION

Prospective teachers should have the necessary competences to be familiar with information technology (IT), especially science students (Efe, 2011). As stated in (Sang *et al.*, 2010). "Student teachers should be prepared to integrate information and communication technology (ICT) into their future teaching and learning practices".

There are many models for training prospective and in-service teachers in this highly versatile technology (Bidariana *et al.*, 2011). and (Ainley *et al.*, 2008). Many have questioned the relevance of IT in the educational performance (CERI/OECD, 2010) and also the implications of ICT for teaching and learning. Innovative pedagogical approaches with IT have been experienced worldwide, e.g. (Ottestad, G., 2010).

The introduction of the ICT in schools is not always easy and different factors can become obstacles to its relevant use by many teachers. Such obstacles have been studied by (Hammond, M., 2009) and (Muller *et al.*, 2008). But, in all the cases, prospective teachers should have the necessary IT skills.

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? 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. The Faculty of Pedagogy comprises 7 programs (Mathematics, Physics, Chemistry, Biology,

Literature, History and English). Its graduates are destined to teach in secondary and high schools mainly around Dalat, province of Lam Dong, Vietnam.

The number of students enrolled every year is in the range of 120 to 160. Students must study for 4 years and complete 125 credits of education and pedagogy areas and specialty program according to their majors. Among the activities of students in the pedagogy area, one can cite pedagogical visits, pedagogical reality, and pedagogical practice in the high schools of Dalat city. Among the extracurricular activities of students in the 7 programs, one can cite: first teaching, teacher professional contest, student scientific conferences annually.

For now, there is no course on information and communications technology for teaching such as, for example, the one described in (Bari, M. 2016) aiming at developing application software skills for prospective teachers of different programs. Before offering students an optional IT activity, a survey has been conducted to get an idea of their self-perception on their mastery of processing multimedia objects and website creation. The initial results of this survey are presented in this paper and the eventual discussion is limited to the comparison by program in order to try to establish different profiles.

This article is organized as follows: after the present introduction, section 2 describes the survey; section 3 presents the global results of the survey; section 4 presents the detailed results according to the programs; section 5 concludes the paper.

II. THE SURVEY

The representation according to the year within the programs is rather balanced except for the 4th year (see Fig. 2): first year: 15, second year: 18, third year: 14, and fourth year: 23. According to many participants, one of the main reasons for the higher participation of the students of the 4th year (last year in the programs) and those of the English program was the possibility to improve their English since the seminar has been given in English and was focused on the active participation of the students.

The survey has been conducted during the first week of November 2016. It has been created using Google Forms (see Fig. 1). A link has been sent to all the students of the faculty of pedagogy via a shortened URL. Students had one week to response. The survey was in Vietnamese and in English. Students were asked if they accept the use of their responses, anonymously, for research purposes. The questions of the survey were focused on media processing (images, sounds, and videos) and website creation. 72 responses were received among which 70 were valid.

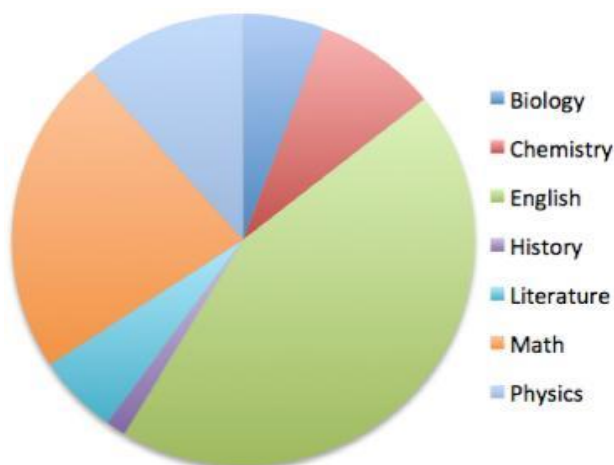


Fig 1. Distribution according to the programs.

Students originated from 7 programs and the representation by program is rather unbalanced (see Fig. 1): biology: 4, chemistry: 6, English: 31, History: 1, Literature: 4, math: 16, and physics: 8 (all the students are in secondary programs).

The representation according to the year within the programs is rather balanced except for the 4th year (see Fig. 2):

- first year: 15
- second year: 18
- third year: 14
- fourth year: 23

According to many participants, one of the main reasons for the higher participation of the students of the 4th year (last year in the programs) and those of the English program was the opportunity to improve their English language since the seminar has been given in English and was focused on the active participation of the students.

The global results of the survey are presented in the next section.

III. GLOBAL RESULT

This section presents the global results of the survey and then the results from the point of view of the programs. The questions of the survey were focused on media processing (images, sounds, and videos) and website creation. As shown in Fig. 1, the possible responses range from 1 to 4, with the following meaning: 1= very good, 2= good, 3= average, and 4= none. This kind of survey may response the question: “Are the students in different programs have the same self-perception of their IT skills?”. Do they have different profiles depending on their program?



Fig 2. Distribution according to the year within the programs.

Tables I and II show the student responses for all the programs, respectively, by numbers and by percent.

TABLE I: STUDENT RESPONSES FOR ALL THE PROGRAMS (N=70)

Skills	Very good	Good	Average	None	Total
Image	5	40	23	2	70
Sound	7	29	30	4	70
Video	5	26	34	5	70
Website	1	16	32	21	70
Total	18	111	119	32	280

TABLE II: STUDENT RESPONSES FOR ALL THE PROGRAMS (%)

Skills	Very good	Good	Average	None
Image	7%	57%	33%	3%
Sound	10%	41%	43%	6%
Video	7%	37%	49%	7%
Website	1%	23%	46%	30%
Total	6%	40%	43%	11%

Fig. 3 below shows the student responses for all the programs using curves to allow graphical comparison.

It appears that most students have no skill in website creation. 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 (except for the use of the social media where the production of information does not necessitate website creation skills). Due to the lack of specific courses on the subject, this result is not surprising.

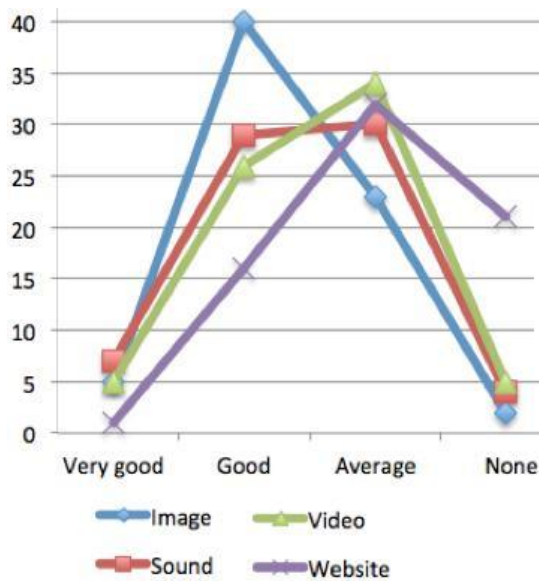


Fig. 3. Student responses from all the programs.

It appears that most students have no skill in website creation. 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 (except for the use of the social media where the production of information does not necessitate website creation skills). Due to the lack of specific courses on the subject, this result is not surprising.

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 in the two other media, probably due to the extensive use of smartphones to take pictures and modify them before publishing them on the social media.

The next section presents the results according to the programs the students belong to.

IV. DETAILED RESULTS BY PROGRAM

The details for the programs English (31 responses), math (16 responses), and physics (8 responses) are presented below. Due to the few responses from the students of the other programs (chemistry, biology, history and, literature), they were only included in the global results in the previous section.

Fig. 4 shows, using graphical curves, the responses from the students of the English program. The responses related to the image, sound, and video processing skills obey the normal (or Gaussian) distribution. On one hand, the results show that the majority of the students of this program have a good or a very good image processing skills, which is very similar to the global result (i.e., 64%) and, on the other hand, they have less website creation skills (58% versus 69% for good and average responses).

The sound and video skills are very similar for the students of this program.

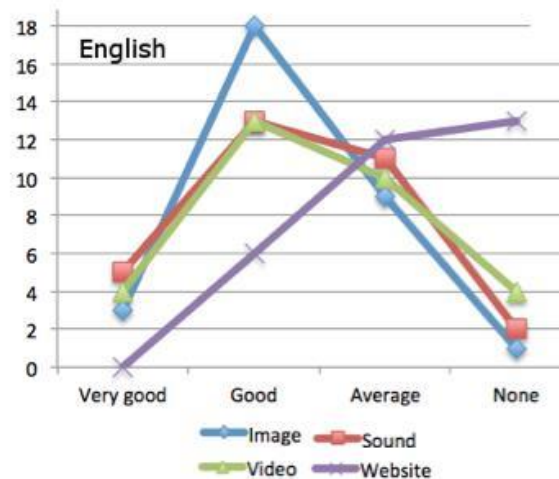


Fig. 4. Student responses from the English program.

Fig. 5 below shows, using graphical curves, the responses from the students from the Math program.

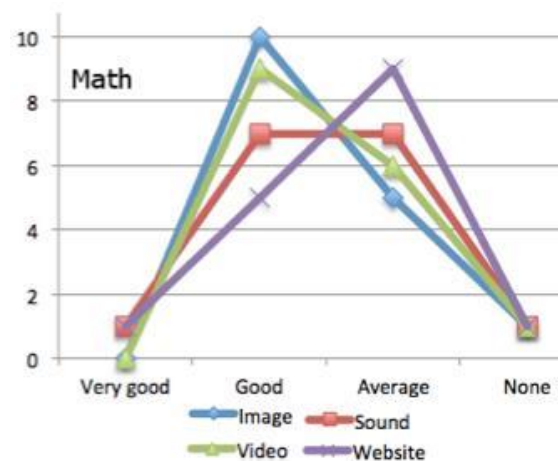


Fig. 5. Student responses from the Math program.

The responses related to all the different skills obey the Gaussian distribution, including the website creation skill. This situation makes the students of this program have a different profile from the general profile shown in Fig. 3 since 94% of these students have, at least, an average skill for the different IT skills.

Fig. 6 (next page) shows, using graphical curves, the responses from the students from the physics program.

The responses for the image and sound processing skills are the same for the students of this program, thus, the two curves are identical, and the image curve does not appear on the figure. The responses related to all the different skills obey the Gaussian distribution, including the website creation skill since only 25% of the students have declared that they do not have any skill for that item. The results show that the students of this program have a different profile from the general profile shown in Fig. 3 since all the students have, at least, an average skill for media processing.

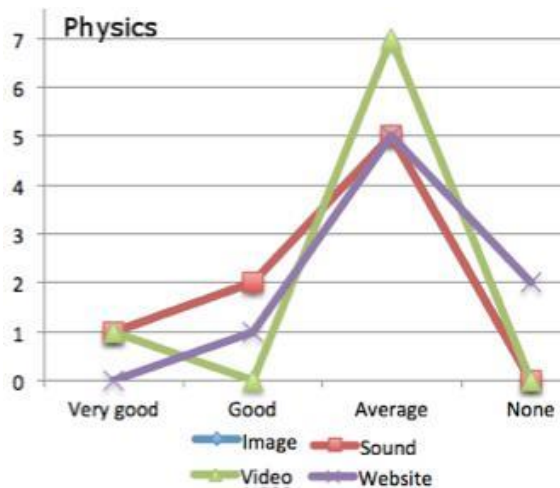


Fig. 6. Student responses from the Physics program.

V. CONCLUSION

This paper presented the initial results of a survey on the IT skills of prospective teachers of the faculty of pedagogy of Dalat University in Vietnam. The questions of the survey were focused on media processing (images, sounds, and videos) and website creation. The results show that the IT skills of the students are not homogeneous from one program to another. On the one hand, the students of different programs have different profiles, but on the other hand, it is hard to draw a conclusion since the number of participating students varies a lot according to the program they belong to. Nevertheless, these numbers give an interesting snapshot of the situation at a particular point of time.

These initial results will be supplemented by future analyzes using the same survey for 3 consecutive years allowing the evolution over time and focusing on the year of the students within their program.

VI. REFERENCES

- Ainley, J., Enger, L., & Searle, D. (2008). Students in a digital age: Implications of ICT for teaching and learning. In J. Voogt & G. Knezek (Eds.), *International handbook of information technology in primary and secondary education* (pp. 63 – 80). New York: Springer.
- Bari, M. (2016). Information and communications technology for prospective teachers. *Proceedings of the International seminar on education*. Padang, Indonesia. ISBN: 978-602-72537-2, 590-598.
- Bidariana, Sha., Bidariana, So & Davoudi, AM. (2011). A Model for application of ICT in the process of teaching and learning. *Procedia - Social and Behavioral Sciences*, 29, 1032-1041.
- CERI/OECD: Centre for Educational Research and Innovation & Organisation of Economic Co-operation and Development. (2010).

- Are the new millennium learners making the grade? *Technology use and educational performance in PISA*. Paris, France.
- Efe, R. (2011). Science Student Teachers and Educational Technology: Experience, Intentions, and Value. *Educational Technology & Society*, 14(1), 228–240.
- Hammond, M., Crosson, S., Frakouli, E., Ingram, J., Johnston-Wilder, P., Johnston-Wilder, S., Kingston, Y., Pope, M. & Wray, D. (2009). Why do some student teachers make good use of ICT? An exploratory case study. *Technology, Pedagogy and Education*, 18, 59-73.
- Muller, J., Wood, E., Willoughby, R., Ross, C., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computers & Education*, 51, 1523–1537.
- Ottstad, G. (2010). Innovative pedagogical practice with ICT in three Nordic countries – differences and similarities. *Journal of Computer Assisted Learning*, 26, pp. 478-491.
- Sang, G., Valcke, M., van Braak, J., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviours with educational technology. *Computer & Education*, 54, 103-112.



Professor Moncef Bari is a full-time faculty member of computer science at the Department of Didactics at the University of Quebec at Montreal, Canada where he has been vice-dean of studies of the Faculty of Education for seven years. He holds a Ph.D. in Computer Science with a focus on Information Systems. He also holds a Master's in Economics and is an engineer in Computer Science. Moncef previously was an assistant professor at the Computer Science Department of the University Paris 12 (France) and at the Algerian Petroleum Institute (Algeria). He has been an invited professor at the Delhi Institute of Technology (India) and, more recently, at the Dalat University (Vietnam).

Dr. Bari has over thirty years of experience in Information Systems, Software Engineering, and IT for teaching. His scientific research has been focused on Object Technology, Active Information Systems, Ada language, and Multimedia for teaching. He is the author of several publications on these topics.



Professor Phu Chi Hoa has been senior lecturer, ass. professor, head of Theoretical Physics department for four years, Vice-dean of the Physics faculty for five years, Vice-dean of the postgraduate faculty for five years, Dean of the Faculty of Pedagogy at the Dalat University for five years. Now, Dr. Phu Chi Hoa is a full-time faculty member of the Faculty of Pedagogy at the Dalat University, Vietnam.

Professor Phu Chi Hoa has been an invited professor at the Dong Nai University, Thu Dau Mot University, Can Tho University (Vietnam), Dalat Nuclear Research Institute, Vietnam Academy of Science and Technology.

Professor Phu Chi Hoa has over forty years of experience of research and teaching in physics, physics pedagogy. His research and teaching have been focused on subjects such as quantum physics, statistical physics, particle physics, history of physics, math for physics, physics teaching methods, creative experiences ...

Professor Phu Chi Hoa has guided about 20 graduate students to successfully defend their master's thesis, has published 5 textbooks physical, 4 monographs on theoretical physics, and about 50 articles on subjects physical and education.