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A GIS-BASED ANALYSIS

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THE CHANGING PROFILE OF UPOU GRADUATES WITH THE CHANGING MODES OF DELIVERY: A GIS-BASED ANALYSIS¹

Ricardo T. Bagarinao² and Percia V. Secreto³

Presented by Ricardo T. Bagarinao, Dean of the Faculty of Education,
UP Open University during the Research Conversation on 21
September 2018 at Sandbox, CCDL, UPOU HQ, Los Baños, Laguna

ABSTRACT

This conversation paper sought to determine the impact of the changing modes of delivery in distance education of the University of the Philippines Open University (UPOU) on the profile of its graduates. The UPOU's three modes of delivery in chronological order are the distance education (DE) with face-to-face (F2F) study sessions, blended learning, and online learning. Through the use of the Geographic Information System (GIS), the fitness elements of a student - spatial and time - in the learning environment under the three modes of delivery were utilized as an initial source of data to determine the variables to be considered in the study. The variables included were geographic location, age, civil status, sex, general weighted average (GWA), and percent time completion. The students' pattern distribution was observed in the DE with F2F study sessions, blended learning, and fully online learning mode. The geographical location of the students tended to be dispersed in the DE mode and then became more concentrated as the university moved to the blended learning and full online modes. Based on age, civil status, and sex, the students followed the same pattern of distribution. Meanwhile, the GWA of the students under online learning was higher compared to those under the DE with F2F sessions and blended learning, which may be attributed to the availability of various sources online. Furthermore, it was found out that blended learning had a relatively longer percent time completion, which may be attributed to the pressures experienced by the students. It was recommended that the university diversify its mode of delivery, especially considering that there were more students coming from senior high school who were exposed heavily to F2F study sessions. It was also suggested that the university focus on providing student support in whatever mode of delivery will be chosen.

¹While this conversation paper is a publication of the University of the Philippines Open University, the opinions expressed in this publication are those of the author/s. They do not reflect nor represent the opinions or views of the University as a whole. The presentation and interpretation of information in this publication do not imply the expression of any opinion on the part of UPOU.

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INTRODUCTION

The Geographic Information System (GIS) is a “system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data” (“Mapping and Geographic Information Systems”, n.d.). It can refer to a number of different technologies, processes, and methods. It is applied in various operations and applications related to engineering, planning, management, transport/logistics, insurance, telecommunications, business, and education. In this study, it was used as a tool for analyzing the impacts of the changing modes on the profile of the graduates of University of the Philippines Open University (UPOU). This study was an offshoot of the research that we did in collaboration with researchers from four other Asian Open Universities located in Thailand, Malaysia, Vietnam, and Indonesia known as the OU5. We focused on the learner’s persistence in an open university which was just one of the studies conducted by the OU5. Specifically, our focus was on the changing profile of the UPOU graduates as affected by the changing modalities of UPOU.

UPOU is the fifth constituent university of the UP system and is known to be the cyber campus of UP. The university had been implementing three modes of delivery since its establishment in 1995. These three modes are Distance Education with face-to-face (F2F) Study Sessions, Blended Learning, and Online Learning.

Distance Education with Face-to-Face Study Sessions

The first mode of delivery that was practiced at UPOU was the distance education mode with regular F2F study sessions. It ran between 1995 and 2000. The study sessions were conducted in physical learning centers located in different areas in the country—from Northern Luzon down to the Mindanao region. In this mode of delivery, the students went to a learning center to participate in the discussion sessions or interactions. The content was packaged as a print-based module, and it was delivered to the students once they were officially enrolled, or the students picked up the modules from the learning center. The interactions in this mode of delivery usually took place in a physical learning center facilitated by a tutor and was conducted once a month. During the study sessions, students asked questions and clarifications on the concepts that were discussed in the course.

Blended Learning

Between 2001 and 2007, the university shifted to what we call blended learning. It invested on an online platform but did not forsake the regular F2F study sessions, so there were still faculties-in-charge who were doing the study sessions at the learning centers while some of the interactions in the course were done in an online platform. The platform used then was not MOODLE but Integrated Virtual Learning Environment (IVLE). In this mode of delivery, the contents were still packaged as print-based modules, but there were already e-copy versions that were uploaded in the learning management system. Students now had an option on whether they would participate in the physical study session or in the discussion forum in the learning management system.

Online Learning

By 2007 up to the present, the university shifted to online learning mode completely. Although there were still print-based modules in the beginning of this period, the resource-based course package, which relied primarily on the use of resources available on the internet, was developed. Instead of producing the full module for a specific course, the university developed study guides that provided an information to the students as to what they should be looking for and how they would study the materials that are being used in the course.

METHODOLOGY

Given the changes in the modalities of content delivery, the team consisting of Ms. Percia V. Secreto, Student Records Evaluator III of the Office of the University Registrar and I, Dr. Ricardo T. Bagarinao, Dean of the Faculty of Education of UPOU looked into how the profile of UPOU graduates had been affected by the changes of these modes using the GIS. Through the concept of natural selection, we viewed the mode of delivery as an important component of the learning environment of the students and assumed that each mode of delivery had a unique learning environment that imposed certain selective pressure on the students.

DISCUSSION

If we try to look at the first mode of delivery, we can say that students experienced pressure in terms of going to the learning center, especially if they were based far from it. Given this pressure, it was possible that some of the students, particularly those who were living far from the learning center, were not able to participate in the study session. In that sense, they were being disadvantaged, which created some demotivation on the students. In effect, these groups of students were selected out from that type of learning environment. Also, some students, especially those that were physically challenged, were not able to go to the learning center physically to participate in the discussion. In the second mode of delivery, we felt that the selective pressure may be greater compared to the one experienced by the students in the first mode of delivery. Aside from the physical pressure of going to the learning center, even the access of the student created some pressure on them, primarily on those who did not have a good internet connection. If you were a student who lived far from the learning center and without an internet connection, then you would be experiencing both pressures. Again, we considered the natural selection framework, which states that those who are fit to survive would survive, and those who are not fit would be eliminated from the environment, in our analysis. In the third mode of delivery, there were two selective pressures that the students experienced. One, again, was internet connectivity, and the other one was the digital literacy of the student. If students were not tech-savvy, for instance, they were eliminated along the way.

On the premise of natural selection, we say that those students who were able to graduate from their programs were the ones that were fitted or were able to adapt to the learning environment created by each modality. This assumption implied that there were some impacts or changes in the profile of the UPOU graduates if this mode of delivery created some selective pressures among the students who were accessing education through the distance education mode. The fitness of a student was affected by both the spatial and time elements. Space in the sense that if you are located in a place that is far from the learning center or has very low internet connectivity, your fitness may be lower than those students that are living closer to the learning center or who has an internet connectivity that is more or less stable. That fitness, however, may change over time especially if the student would relocate from that place to a place where you are, more or less, closer to the learning center or where you have strong connectivity. Based on our experience, there are student-teachers who experienced difficulty accessing their course

materials after they had been assigned from an urban area to a far-flung area. What they did was they went down to the city's internet café and access and download the materials, so they would be able to bring them back to their assigned places. In effect, this fitness changed over time, due to the movement of the students.

Because of the elements of space and time, we thought perhaps we can use the GIS as a tool for analyzing the impact of the changing mode of delivery. We retrieved the data from the student database and we included all graduates from 1996 to 2016, spanning 20 years in order to consider the time element. Then, we tried to initially process the data so that we were able to identify or determine the variables that defined the profile of the graduates. In terms of space, we looked at the provincial addresses of the students because it was the most consistent data throughout the different modes of delivery. We also looked at the year of graduation of the student to define the time element of the fitness. From there, we identified certain socio-demographic variables in order to provide more inputs or description to the profile of the student. We considered the geographic location, age, civil status, and sex of the graduates. We also included the general weighted average (GWA) and percent time completion to check the selectivity component of the analysis because we thought that looking at the final grades of the student gave us an idea on up to what extent this mode provided some sort of support (e.g., learning support, to the student whether it was having the physical study session or it was the online study forums that somehow enhanced the learning of the students). The percent time completion pertained to the length of time that the students were able to complete all the requirements of their program and we considered the maximum residency rule (MRR) of each program because I think that at UP, each program has its own MRR. For instance, the Associate in Arts has an MRR of 7 years, the Bachelor of Arts in Multimedia Studies (BAMS) has 10 years, and the diploma programs have four years. To get the percentage of time completion (meaning if the student completed the program within this number of years), we divided the time that the student completed the program with MRR and multiplied it with 100. These were the variables that we used in order to define the profile and we tried to look into whether there are changes in these variables across modalities.

Interestingly, we were able to observe that, indeed, there was a change in the spatial distribution of the graduates. Based on the map, the distribution in the first mode of delivery appeared to be more dispersed (Figure 1). We got a higher number of graduates even in Ilocos region,

Metro Manila, Mindoro, Cebu, Negros, Iloilo, and Davao region. It proved that you can still get a great number of graduates from these different provinces. However, if you are going to look at the changes as the university shifted to blended and online learning, the graduates tended to be highly concentrated in certain areas in the country. Under the blended learning, the number of graduates tended to concentrate in Metro Manila and CALABARZON region. As you move towards the online learning, graduates were highly concentrated in Metro Manila and nearby provinces although there were also some graduates in metropolitan areas in Davao, Cebu, and Iloilo. This impact of the change in modality in terms of geographical location of the graduates was possible because these areas had a strong internet connection. Although it is important to note that we have no hard data to prove that explanation, but based on the existing status of these areas, we can see that the number of graduates somehow was affected by the strength of internet connectivity. It was here where you can see the selective pressure of the modalities; those students who had a strong internet connection were the ones who were more likely to complete their programs.

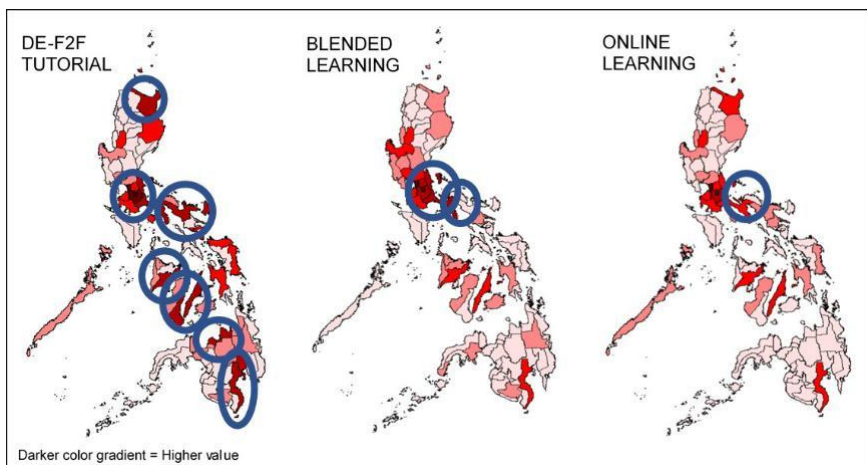


Figure 1. Spatial distribution of UPOU graduates, 1996-2016

As the university moved from the first mode (the one with F2F tutorial sessions) to online learning, the graduates tended to become younger. The first mode of delivery seemed to favor the graduation or completion of the much older students as compared with online learning, which favored more of the younger students. In terms of the sex of the students, there was no significant difference that we found between the male and the female students regarding distribution. It showed the same pattern with the geographical distribution as you move from one mode to another. The

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first mode allowed a dispersed pattern of male and female graduates, but it tended to become more concentrated as you move from blended to online learning. The civil status (single and married) followed the same pattern with geographic location. Again, the emerging pattern was due to the connectivity of the students—female or male. As long as you have strong internet connectivity, then you would be able to have a higher probability to complete your program.

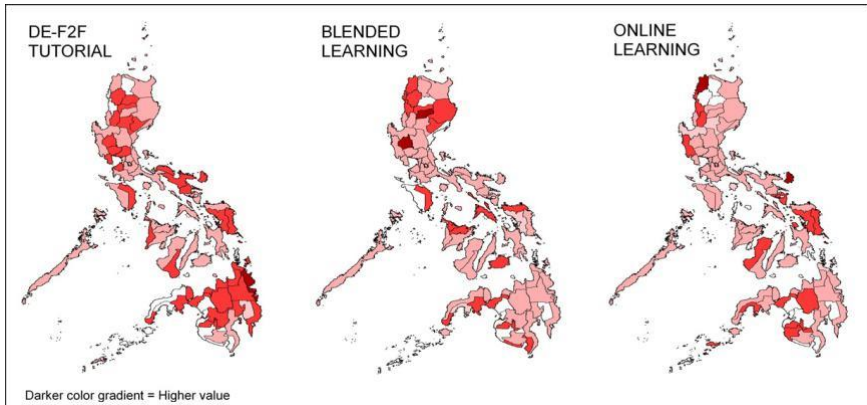


Figure 2. Distribution of UPOU graduate, by age, 1996-2016

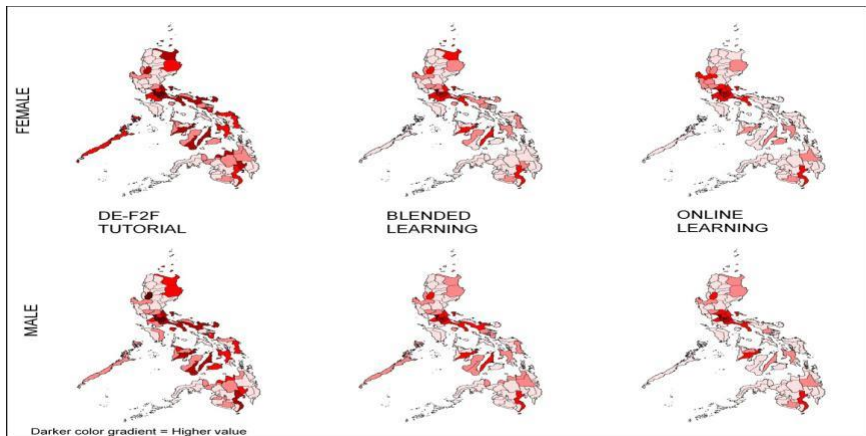


Figure 3. Distribution of UPOU graduates, by sex, 1996-2016

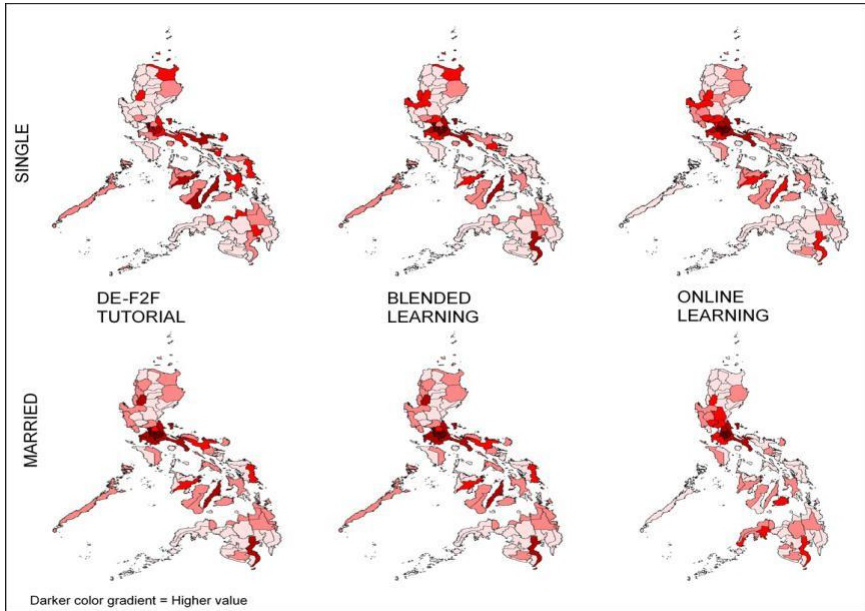


Figure 4. Distribution of UPOU graduates, by civil status, 1996-2016 b

In terms of the GWA of the students, it was very interesting that the graduates from the online learning mode had higher GWA compared to the graduates under the F2F or the first mode of content delivery as shown in Figure 2. This could possibly be explained by the fact that with internet connectivity, you have several sources of information; the student could easily access different sources of information— different perspectives of the discussion about the concepts or theories being discussed in the course. In the first mode of delivery, the students were limited to the information given in the printed module and the ones discussed during the study sessions. They had no choice but to depend on the printed module, unless they would go to the libraries and research those principles or concepts to gain more information about them. In the online learning mode, if the student had difficulty in understanding the concept using the materials that were given to them by their faculties-in-charge, they searched other materials that had a clearer explanation of the principle. Because of that, it was possible that the students under online learning were able to enhance their learning process because of the availability of the resources on the internet. In the process, they were able to get good grades in their courses and that explained why we have this pattern of distribution in terms of GWA.

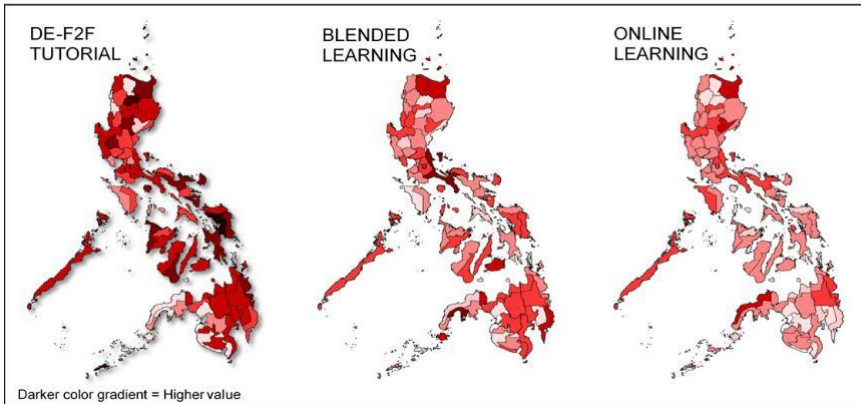


Figure 5. Distribution of UPOU graduates, by GWA, 1996-2016

The pattern distribution between F2F mode and online learning in terms of percent time completion, as shown in the figure, was more or less the same. The blended learning had relatively longer percent time completion. It was possible that the students under this mode of delivery had to cope with the pressure of F2F and that of the online; they were still adjusting to the online component of the delivery while they experienced some pressures in the F2F. Hence, there were two pressures under this modality which were possibly the reason why students took a longer time in completing their programs; however, we still need to have empirical data that could support this claim. We could look into the number of times that the student applied for leave of absence or have applied for dropping of their courses in a particular term under this mode of delivery.

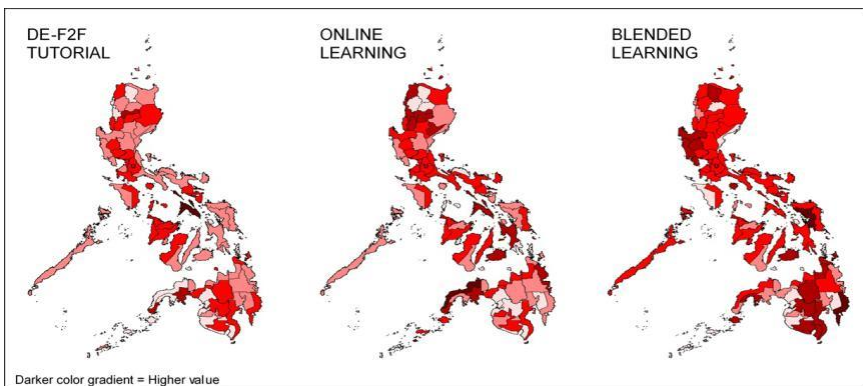


Figure 6. Distribution of UPOU graduates, by percent time completion, 1996-2016

CONCLUSIONS AND RECOMMENDATIONS

Based on what we observed using the GIS as a tool of our analysis, we can say that the different modes of content delivery implemented in the university produced a relatively different set of graduates. We had different sets of graduates under the regular study tutorial session mode, blended learning mode, and online learning mode. It was observed that in terms of geographic location, age, and sex, the number of graduates tended to become concentrated in certain areas. Most of the graduates were coming from the urban centers under the online learning mode. Moreover, the modes of content delivery differed in the percent completion time and the GWA of students. With respect to GWA, the online learning mode had somehow provided enhancement to the learning process of the students because of the availability of the different sources of information on the internet as compared to those students who were under the first mode of delivery.

Hence, we would like to recommend that the university consider the mode of delivery that is being implemented in the university, especially when it comes to providing support to the students. If the university would like to widen its reach, the university should have to rethink the modality that is being implemented at present. Given our observations, we would like to recommend that the university should explore the diversification of its modality from purely online. The university could also look into having the F2F study sessions. In fact, the discussions at the faculty level regarding this should be continued. We are looking into the possibility of having regular F2F study sessions, especially for the undergraduate students because there is now a change in the profile of our undergraduate students. We are now having undergraduate students who are coming freshly from senior high school. Since they are exposed more on the F2F type of modality, I think they need to have a scaffold towards online learning. One way of doing that is to have a regular F2F study session. Also, the mandate of the university implies that we should be providing a lifelong learning experience to, at least, a wide group of individuals, so if we would like to reach out those older individuals, then I think we need to diversify the modality because it is usually the younger generations that are more exposed to the advances in ICT than the older ones. The older ones may need to have some form of content delivery that is not very dependent on technology.

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The Office of the Vice Chancellor for Academic Affairs (OVCAA) publishes these papers as initially presented in various academic venues conducted by the university as well as from empirical studies funded under UPOU's and other external research grants. Invited papers are those that are research-based with strong empirical basis that could serve as a trigger for further conversation in the continuing discourse in open and distance learning.

About the Cover

The interconnected vertices represent the expansion of ideas as they originate from one point to the next leading up to a continuous complex exchange and production of knowledge through academic discourse between and among ODeL practitioners. The hue blue represents consciousness, knowledge, expansiveness, and inspiration which the series aims to convey.