

WHEN AND WHO DROPOUTS FROM DISTANCE EDUCATION?

Sri UTAMI

ORCID: 0000-0001-7232-6550
Faculty of Science and Technology
Universitas Terbuka
Tangerang Selatan, INDONESIA

Dr. Inggit WINARNI

ORCID: 0000-0002-1471-6865
Faculty of Science and Technology
Universitas Terbuka
Tangerang Selatan, INDONESIA

Dr. Sri Kurniati HANDAYANI

ORCID: 0000-0001-9389-8232
Faculty of Science and Technology
Universitas Terbuka
Tangerang Selatan, INDONESIA

Fawzi Rahmadiyan ZUHAIRI

ORCID: 0000-0002-7167-6222
Faculty of Science and Technology
Universitas Terbuka
Tangerang Selatan, INDONESIA

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ABSTRACT

The high rate of drop out is still a problem in the distance learning system, including at the Universitas Terbuka (UT). At UT, the term dropout is better known as the status of non-active students. The study aims was to determine the median time and determinant of non-active student in distance learning in Indonesia. This study used a cohort analysis in student of biology department who first registered in 2012 to 2014. The median time of non-active students was identified by the Kaplan-Meier analysis and the determinant of non-active student was analyzed by Cox proportional hazard model. The percentage of non-active students in this study reached 42%, with half of the students becoming non-active in the first two semesters. Students who have a greater risk of becoming non-active are those who are >45 years old, women, employed, recent education is not relevant to the field of biology, knowledge of the concept of distance learning and laboratory practice is lacking, has never participated in online tutorials and face-to-face tutorials, and is not satisfied existing academic services. The optimization of the provision and quality of preferred learning services at the beginning of the semester will be able to avoid higher-risk of non-active students.

Keywords: non-active student, dropout, distance education, Indonesia

INTRODUCTION

The high rate of student dropout in open university, which is generally utilise distance learning system, remains a concern for many educational institutions. A study showed that student persistence rate in open university is 10-20% lower than conventional university, with only 50% of the student complete their study (Carr in Rovai, 2002). However, student dropouts rate of 30-50% in open university is still considered normal (Moore & Kearsley, 1996).

The problem of high rate of student dropout is also become a main concern for Indonesia Open University (in Indonesian: Universitas Terbuka or UT), Indonesia's only public university that implement distance education. However, UT is not applying dropout rule for its student: their status is categorized as non-active student, and student is classified as non-active students if they do not register for four consecutive semesters. The number of non-active students in UT is quite high (Ratnaningsih, 2011), and generally most of them do not finish their study (Saefuddin & Ratnaningsih, 2008). Based on the UT's 2015 annual work report, the number of active students per 14th of December 2015 is 396.955, with an average number of registration per semester is 309.508. Compared to 2014, this number decrease for 11% (Universitas Terbuka, 2015).

Several studies on non-active students and student persistence in distance learning institution or open university have been performed. A study showed that age, number of subjects registered, employment status, participation in online tutorial, and grade point average are contributing factors for students being non-active (Ratnaningsih, 2011). Moreover, other factors such as gender, academic leave of absence, educational background in high school, and student's satisfaction in educational services provided by the university also have been proposed (Saefuddin & Ratnanningsih, 2008; Park & Choi, 2009; Sembiring, 2014; Sembiring, 2015).

The relatively high number of non-active students in UT need to be solved, and one of the initial strategy is by investigating many important factors contributing for such condition. Unfortunately, the previous literatures about the identification of vulnerable period of non-active students were still rare. Such information is very important, since we can keep track of student activity to prevent them for being non-active. Therefore, the purpose of this study is to identify the median time of- and also the determinant in- non-active student in Indonesian distance education.

METHOD

Study Design

This study utilises cohort analysis in students from Biology Department in UT. Particularly, students registered from the first semester of 2012 until the first term of 2014. The observation were conducted from 2012 to 2017. The Biology Department has the lowest number of students but with high percentage of non-active students (47%) during the aforementioned period. As previously mentioned, students not register for four consecutive semesters will be categorized as non-active students.

Data Collection and Analysis

There are two types of data analysed in our study: primary and secondary. The primary data is in the form of questionnaire in which examines students's understanding of distance education; the relevance of their field of study compared to previous educational background; participation on learning services such as a face-to face tutorial online, an online tutorial and practicum; and a satisfaction on academic services such as academic counseling, teaching material services, and tutorial services. On the other hand, the secondary data is obtained from the student registration database, in which include information about student's name and identification, age, gender, employment status, formal educational background, student activity status (active or non-active student), and the time of registration. In our study, the data of student's status are grouped as active and non-active student based on the last observation we performed. Non-active status is classified as an event, and the registration date of the student before being non-active is categorized as an event date. All the variables analysed in this study is presented in Table 1.

Table 1. Description of variables used in this study

Variable	Description
Age	Age at the time of registration, categorized into three groups: less than 35, between 35 to 45, and more than 45 years of age.
Gender	Men or Women
Employment Status	Employed or Unemployed
Relevance to Previous Field of Study	Relevance of students's field of study compared to previous educational background
Knowledge about Distance Learning in Higher Education	Student's knowledge about concept of distance learning in higher education; categorized into good (able to answer 76 – 100% of questions), adequate (56 – 75%), and poor (less than 56%)
Knowledge on Practicum	Student's knowledge about practicum in Biology Program in UT; categorized into good, adequate, and poor knowledge (able to answer 76 – 100%, 56 – 75%, and less than 56% of questions, respectively).
Activity in Face-to-Face Tutorial	Students participation in face-to-face tutorial during their study; categorized as active if they attend face-to-face tutorial at least once, whereas not-active if they never attend face-to-face tutorial.
Activity in Online Tutorial	Students participation in, at least, one online tutorial during their study, which is held eight times distributed in eight weeks in one academic semester; categorized as often, moderate, and never (if being active at least five, one to four, and zero times in one course, respectively).
Satisfaction in Academic Services	Consist of student's satisfaction on academic services, such as academic consultation, learning material availability and services, and tutorial services; categorized as very satisfactory, satisfying, and not satisfying.

The data is analysed using STATA SE12.0 (College Station, TX). Descriptive analysis was carried out on categorical data using frequency distribution, whereas Kaplan-Meier analysis was used to determine the mean time between failure on non-active students (missing data/data missing will become sensors in this analysis). Moreover, Cox proportional hazard model analysis was also performed to determine the significance of each independent variables on the incidence of non-active status on student, and the result obtained from this analysis is crude hazard ratio (HR) and p-value with a confidence level of 95%. Further analysis was performed using cox regression. The p-value limit included in the multivariate analysis is less than 0,25, and variables with p-value of <0,25 were analysed into one cox regression model using backward elimination method. Significant variables are variables that have p-value <0,05 after being analysed in each model. In the final model, the adjusted hazard ratio is obtained to determine the magnitude of the influence of independent variables on non-active status on students. The data fit the proportional-hazards assumption with $p = 0.5707$ ($p > 0.05$).

FINDINGS and DISCUSSIONS

The number of students registered in UT' Biology Department in the period of 1st semester of 2012 to 2nd semester of 2014 is 361, with 198 (55%), 156 (43%), and 7 (2%) are categorized as active, non-active, and alumni, respectively. Baseline characteristics are presented in Table 2. More than half (64%) of non-active students are less than 35 years old/ y.o., 73% of students are having a job, almost all of them (91%) have relevant study fields compared to previous formal educational background, and most of the students (73%) are women. Moreover, most of non-active students have good knowledge on the concept of distance learning in higher education and its practicum implementation. 64% of non-active students often use learning services but none of them taking a face-to-face tutorial, and most of students are satisfied with academic services, except in non-print teaching materials and face-to-face tutorials.

Table 2. Characteristics of the student in Biology Department

Student Characteristics	Non-active student (n=11)	Total respondent (n=26)
Sociodemography		
Age (years old)		
< 35	7 (64%)	21 (81%)
35-45	3 (27%)	3 (11%)
>45	1 (9%)	2 (8%)
Gender		
Female	8 (73%)	17 (65%)
Male	3 (27%)	9 (35%)
Employment		
Unemployed	3 (27%)	6 (23%)
Employed	8 (73%)	20 (77%)
Relevance to previous field of study		
Relevance	10 (91%)	21 (81%)
Irrelevance	1 (9%)	5 (19%)
Students knowledge		
Knowledge about distance learning		
Good	8 (73%)	21 (81%)
Adequate	3 (27%)	5 (19%)
Knowledge on practicum		
Good	7 (64%)	20 (77%)
Adequate	3 (27%)	5 (19%)
Poor	1 (9%)	1 (4%)
Activity in learning service		
Activity in online tutorial		
Often	7 (64%)	16 (62%)
Moderate	2 (18%)	7 (27%)
Never	2 (18%)	3 (11%)
Activity in face-to-face tutorial		
Active	0 (0%)	6 (23%)
Not-active	11 (100%)	20 (77%)
Satisfaction in academic services		
Academic consultation		
Very satisfactory/satisfying	7 (64%)	18 (69%)
Not satisfying	4 (36%)	8 (31%)
Printed educational materials		
Very satisfactory/satisfying	8 (73%)	19 (73%)
Not satisfying	3 (27%)	7 (27%)
Non-printed materials		
Very satisfactory/satisfying	2 (18%)	7 (27%)
Not satisfying	9 (82%)	19 (73%)
Online tutorials		
Very satisfactory/satisfying	7 (64%)	17 (65%)
Not satisfying	4 (36%)	9 (35%)
Face-to-face tutorials		
Very satisfactory/satisfying	2 (18%)	8 (31%)
Not satisfying	9 (82%)	18 (69%)

During the observation period of 2012 to 2017, there were 43% of non-active students from a total sample of 361 students. In this study, the data is collected from 26 students with 42% of them is non-active. According to Moore and Kearsley (1996), the percentage of 30% to 50% of non-active students in distance learning is categorized as common condition. However, the percentage can be a main concern for UT since Biology Department, and also the Faculty of Mathematics and Natural Science, has lower number of

students compared to other faculty in UT. Moreover, a study showed that non-active student can lead to a higher dropout rate (Ratnaningsih, 2011), thus can potentially reduce the number of students in UT's Biology Department. Therefore, it is of importance to solve this by, among many other solutions, giving extra motivation for Biology student to finish their study.

Based on Kaplan-Meier analysis on all students, median time of non-active students is in the second semester (Table 3, Figure 1, and Figure 2), which means that 50% of non-active students failed their study in the first two semesters. This shows that the first two semesters is a critical period for students in UT's Biology Department to become non-active. This finding is similar with another study in Brazil's Open University, in which 85% of students withdraw their study during the initial semesters (Rodrigues de Oliveira, Aparecida Oesterreich, & Luci de Almeida, 2018). Some of the main causes of student's dropout are time constraints, heavy workload and schedule in their job, and problems in utilizing technology and adapting learning methods in distance education system (De La Varre, Irvin, Jordan, Hannum, & Farmer, 2014; Rodrigues de Oliveira, Aparecida Oesterreich, & Luci de Almeida, 2018) this dissemination has been accompanied by high dropout rates, consistently reported in different programs and countries. This is the reality of distance education in Brazil too: a great expansion, including the establishment of Universidade Aberta do Brasil (UAB-Open University of Brazil). The problem with high numbers of non-active students during initial semesters must be addressed accordingly, and one of the solutions is by establishing close interaction and monitoring between tutor and students through provision of learning services, particularly in the first two semesters. Thus, students in the early program of distance learning, which is known as a new learning system for most students, are able to understand and adapt to it. In addition, an increase in understanding of distance learning needs to be strengthened by specific introductory courses or class sessions applied to all new students.

Table 3. Median time of non-active student

Status of student	No. of subject	Survival Time (semester)		
		25%	50%	75%
Active	15	.	.	.
Non-active	11	2	2	7
Total	26	3	14	16

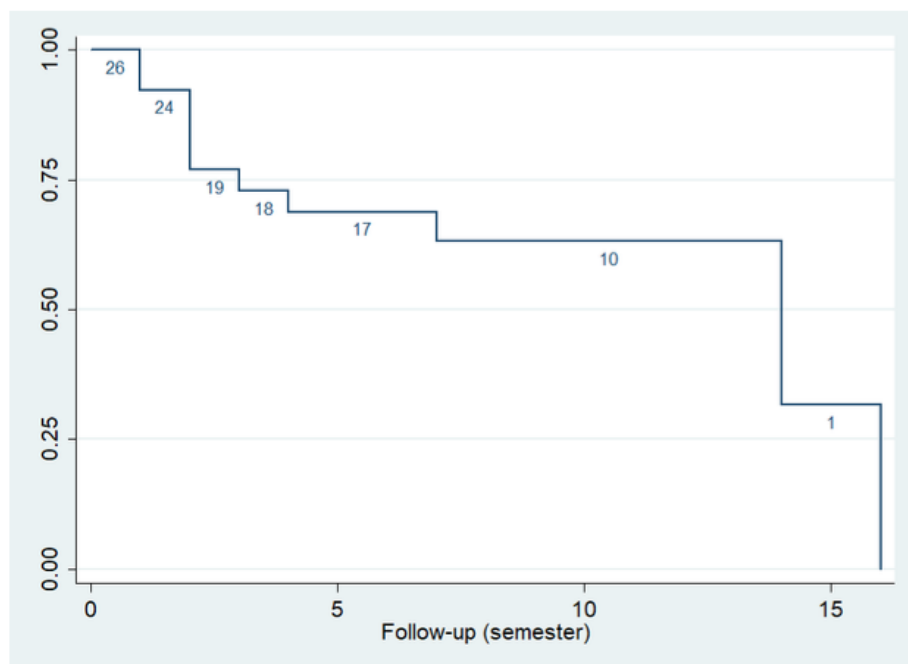


Figure 1. Kaplan-Meier curve of non-active student in all observations

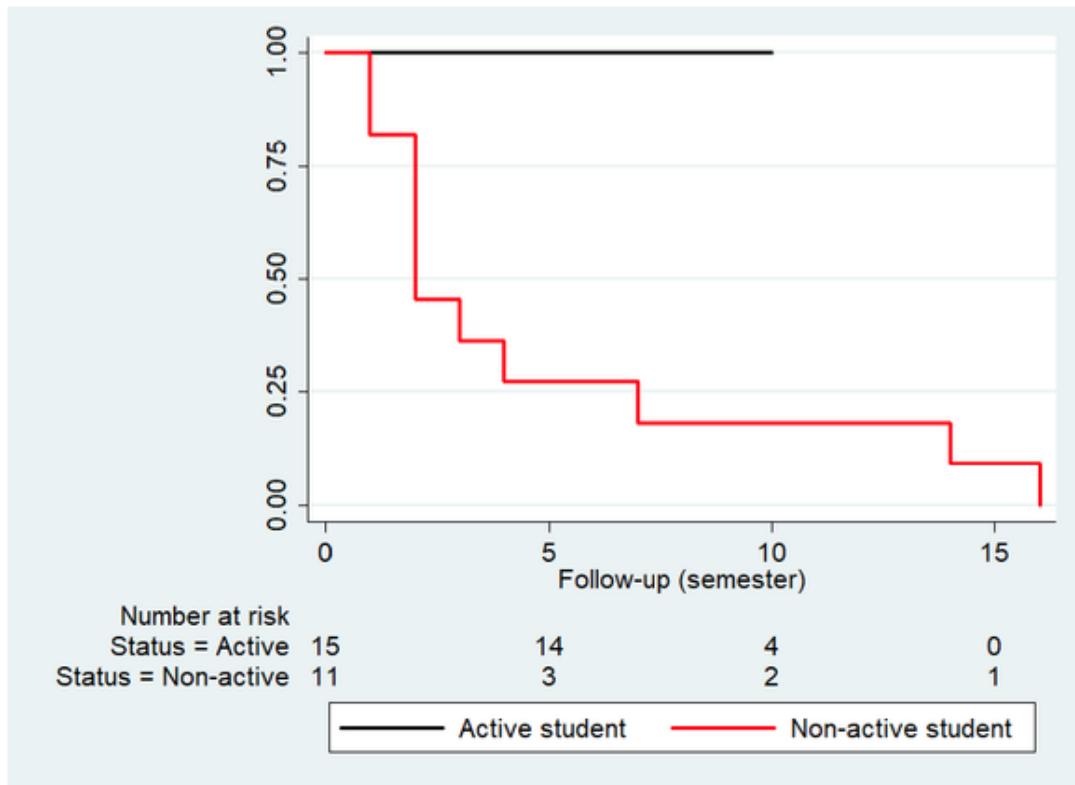


Figure 2. Kaplan-Meier curve based on active and non-active students

Proportional hazard regression analysis shows that students aged >45 y.o have a risk of becoming non-active students 2.5 times higher than students aged <35 y.o, but students who are aged 35-45 y.o actually have a 22% lower risk of becoming non-active students (Table 4). The tendency of older students to experience school dropouts is also found in previous studies (Carr, 2000; Saefuddin & Ratnaningsih, 2008). This is inversely proportional to other studies which suggest that older students in distance learning have a lower risk of dropping out of school (Ratnaningsih, 2011; Stoessel, Ihme, Barbarino, Maria-Luisa, & Sturmer, 2015). It is known that students at distance learning are not limited in age, year of entry, or year of graduation (Pannen, 2016), and generally students in distance learning are adults. The lower risk of non-active student in aged 35-45 y.o compared to age <35 y.o in this study is possible because it is influenced by the scoring assessment of student satisfaction to institution. A study by Fredericksen, Swan, Pelz, Pickett, & Shea (2000) showed that older students tend to report a higher level of satisfaction with e-learning education compared to young age students.

In female students, the risk of being a non-active student is 1.3 times higher than men (Table 4). This result is also found in another study (Stoessel, Ihme, Barbarino, Maria-Luisa, & Sturmer, 2015). On the contrary, findings by Saefuddin & Ratnaningsih (2008) and Peebles (2014) showed the risk of dropping out of male is greater than female, which is associated with lower learning resistance of male than female. The higher risk of dropping out in female can be attributed to the characteristics of distance learning students who generally are those who are already married. This is supported by previously reported study that dropout risk increased in married women, which can be associated with maternity, high household responsibilities, in-laws' restrictions, moving to new city or other family obligations (Carreira & Lopes, 2018; Muslim, Muhammad, Raza, & Touseef, 2017). Moreover, some women also believe that it is not necessary to continue and finish their study, since it will not give benefits for their career (Stoessel, Ihme, Barbarino, Maria-Luisa, & Sturmer, 2015).

Based on employment status, employed students have a risk 1.5 times to become non-active compared to those unemployed (Table 4). This finding is in line with previous study (Saefuddin & Ratnaningsih, 2008; Ratnaningsih, 2011; Kostopoulos, Kotsiantis, & Pintelas, 2015; Stoessel, Ihme, Barbarino, Maria-Luisa,

& Sturmer, 2015). One of the possible factors is the lack of workplace support to continue the employee's education, thus making the learning time of employed students is less (Muslim, Raza, & Touseef, 2017).

Student education in this study is focused on the relevance of their previous field of study. Students whose irrelevance have a risk 2 times more likely to be non-active than those whose relevance (Table 4). Previous research has shown that the more irrelevance of students's previous study, the more difficult for them to continue and finish their studies (Saefuddin & Ratnaningsih, 2008). Other studies state that relevant fields are specific predictive factors for student dropouts (Park & Choi, 2009).

The findings related to sociodemographic characteristics can be used as a reference in an effort to decrease non-active students. It is necessary to optimize distance learning activities that put more attention to the learning characteristics in adult and emphasizing more on students classified in female, employed, and having an irrelevant previous field of study.

Table 4. Univariate analysis of sociodemographic characteristics of non-active student

Variable	HR (95% CI)	p-value
Age (years old)		
< 35	1.00	
35-45	0.78 (0.09-6.47)	0.824
>45	2.46 (0.29-20.46)	0.404
Gender		
Female	1.00	
Male	1.32 (0.34-5.16)	0.684
Employment		
Unemployed	1.00	
Employed	1.52 (0.31-7.33)	0.602
Relevance to previous field of study		
Relevance	1.00	
Irrelevance	1.91 (0.23-15.35)	0.541

Readiness to study online is also an important factor influencing dropping out number of distance learning students (Yukselturk, Ozekes, & Turel, 2014). Readiness of online learning is closely related to the adequacy of knowledge about the concept of distance learning. Students who have sufficient knowledge of distance learning concept are 2.4 times more at risk of being non-active than students who have good knowledge (Table 5). In addition, the knowledge of students about practicum in the biology study program also needs to be highlighted. Students with adequate knowledge about laboratory practicum in biology department have a tendency to be non-active 3.3 times higher than those who have good knowledge. In fact, poor knowledge related to practicum implementation has a higher risk of becoming non-active, reaching 4.3 times (Table 5). This shows that it is important to provide students with relevant information about distance learning and practicum implementation at the beginning of their study so that they are more familiar with the distance learning at UT.

Table 5. Univariate analysis of knowledge about distance learning and practicum in non-active student

Variable	HR (95% CI)	p-value
Knowledge about distance learning		
Good	1.00	
Adequate	2.40 (0.59 - 9.78)	0.220
Knowledge on practicum		
Good	1.00	
Adequate	3.31 (0.78 - 14.12)	0.104
Poor	4.27 (0.48 - 37.51)	0.190

Learning services in the distance learning institution are prioritized through the use of various online media, including online tutorials. The purpose of providing learning services is to help student's understanding about study material and also to establish communication or discussions between tutors and student. Based on the student participation in online tutorials (Table 6), students who have never participated in online tutorial have a risk of almost 3 times higher to become non-active than those who often participated online tutorials. Likewise, students who have never participated in face-to-face tutorials have a risk of becoming non-active up to 7.6 times higher than those who have participated in face-to-face tutorials. This is consistent with the findings of previous study that student involvement in tutorials is able to avoid the risk of dropping out of college (Ratnaningsih, 2011; Thistoll & Yates, 2016). This finding shows that in addition to independent learning through printed materials, students also need the presence of tutors to improve their understanding. Therefore, it is of importance to emphasize the involvement of students to be active in online and face-to-face tutorials.

Table 6. Univariate analysis of student's activity in learning service

Variable	HR (95% CI)	p-value
Activity in online tutorial		
Often	1.00	
Moderate	0.25 (0.03-2.12)	0.209
Never	2.79 (0.54-14.23)	0.216
Activity in face-to-face tutorial		
Active	1.00	
Not-active	7.66 (0)	1.000

Student satisfaction in academic service is also one of the factors influencing student resistance (Sembiring, 2015). Students who feel dissatisfied with academic consultation have a 2.5 times higher risk of being non-active than the satisfied students (Table 7). The higher risk of non-active students also occur in those who are dissatisfied with non-printed materials, online tutorials, and face-to-face tutorials by 1.65 times, 1.9 times, and 5.2 times, respectively. Recent study showed that student satisfaction with e-learning is one of the key indicators for students continuing their study in distance education (Rockinson-Szapkiw, Spaulding, & Spaulding, 2016). Several other studies also revealed that student loyalty is influenced by institutional image and student satisfaction (Ali, Zhou, Hussain, Nair, & Ragavan, 2016; Mulyana & Yuni, 2014). Student loyalty will motivate student to continue and finish their study, whereas institutional images are commonly based on national and international accreditation.

In addition, the development, improvement, and evaluation of teaching materials' quality is often act as a predictor of learning resilience and student learning success in distance learning (Ojokheta, 2010), thus emphasizing the importance of maintaining the quality of these services to get the maximum level of satisfaction from students. Surprisingly, students dissatisfied with printed materials has a lower risk of drop out. We assume that those students has the initiative to find alternative learning materials that are better for their study, thus improve the results in their examination.

Table 7. Univariate analysis of student's satisfaction in academic service

Variable	HR (95% CI)	p-value
Academic consultation		
Very satisfactory/satisfying	1.00	
Not satisfying	2.49 (0.64-9.63)	0.183
Printed educational materials		
Very satisfactory/satisfying	1.00	
Not satisfying	0.54 (0.11-2.58)	0.442
Non-printed materials		
Very satisfactory/satisfying	1.00	
Not satisfying	1.65 (0.34-8.03)	0.531
Online tutorials		
Very satisfactory/satisfying	1.00	
Not satisfying	1.98 (0.53-7.43)	0.308
Face-to-face tutorials		
Very satisfactory/satisfying	1.00	
Not satisfying	5.20 (0.65-41.33)	0.119

The p-value of all variables were more than 0.05 which means that statistically, the analysis were not significant. However, the HR value can be used to see the tendency of a variable towards the status of non-active students. Therefore, we suggest further research with larger number of samples to prove the relationship of these variables to the status of non-active students.

CONCLUSION

The percentage of non-active students in Biology Department is relatively large, with the critical time of failure occurs in the first two semesters. Students who have a greater risk of being non-active based on their sociodemographic characteristics are those who are older than 45 years of age, women, employed, and having previous education not relevant with biological sciences. Moreover, students with insufficient knowledge about the distance learning concept and laboratory practice, as well as students never attended tutorial and not satisfied with most academic services are also prone to become non-active.

To reduce the number of non-active students, especially in the first two academic semesters, several strategies can be applied. One of them is by increasing the interaction between tutors and students through provision of learning services during the initial semester. The provision of these services needs to be supported by policies that can increase student involvement in these learning services. Moreover, students with higher risk of being non-active must be well guided academically in a specific way based on their characteristic. Intensive socialization of distance learning system to new students is also of importance, thus preparing student to be succeed in their study. Finally, comprehensive improvement of academic service quality can give a major contribution in reducing the number of non-active students in distance learning. We suggest further research with higher number of samples utilising similar method used in our study to prove the relationships between the research variables and non-active students.

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BIODATA and CONTACT ADDRESSES of AUTHORS



Sri UTAMI, S.ST., M.Kes., is a lecturer in Open and Distance Learning at Faculty of Science and Technology, Universitas Terbuka. She obtained her Master of Public Health from Udayana University, Indonesia, in 2015. She received Field Research Training Program Scholarship, in collaboration between Udayana University and The Kirby Institute, University of New South Wales, Australia, in 2014. She has 8 years of teaching experience and 4 years of research experience. She has published research articles in scopus-indexed journal, national book chapters, and international conferences. Her research interest are reproductive health, HIV/AIDS, microbiology, and open and distance learning.

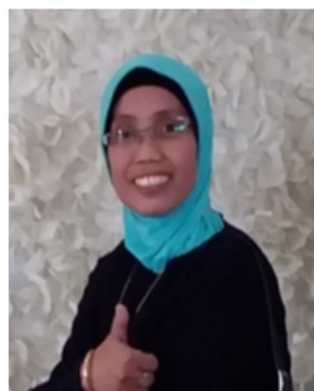
Sri UTAMI

Department of Biology, Faculty of Science and Technology

Address: Universitas Terbuka, 15418, Tangerang Selatan, Indonesia

Phone: +62-21-7490941, extension 1811

E-mail: sri-utami@ecampus.ut.ac.id



Dr. Inggit WINARNI, M.Si., is an associate professor in Department of Biology, Faculty of Science and Technology, Universitas Terbuka (UT). She received her bachelor degree in Biology from Universitas Jenderal Soedirman, Indonesia, in 1989, and her master degree from Institut Pertanian Bogor, Indonesia, in 2004. During her master study, she is a recipient of BPPS (*Beasiswa Pendidikan Pasca Sarjana*) scholarship from Indonesian Ministry of Education and Culture. Her research interests ranging from microbiology, marine ecology, and distance learning. She has publications in national journals, book chapters, as well as conferences. She is also active in developing curriculum based on *kerangka kualifikasi nasional Indonesia* (KKNI; Indonesian National Qualification Framework). Currently, Inggit works as a coordinator for the management of UT's student final examination.

Inggit WINARNI

Department of Biology, Faculty of Science and Technology

Address: Universitas Terbuka, 15418, Tangerang Selatan, Indonesia

Phone: +62-21-7490941, extension 1604

E-mail: inggit@ecampus.ut.ac.id



Dr. Sri Kurniati HANDAYANI, M.Si., is an associate professor in Department of Biology, Faculty of Science and Technology, Universitas Terbuka (UT). She obtained her bachelor degree in Biology from Institut Teknologi Bandung in 1984, and her master degree in Communication in Agriculture and Rural Development from Institut Pertanian Bogor. Sri works at Universitas Terbuka since 1985. Her works include educational technology and plant ecology. She has written many national- and international-indexed research articles related to the aforementioned topics. Sri also has experience in designing, developing, and producing non-printed learning materials for UT's student. Currently she teaches online tutorial on topics such as Conservation Biology, Evolution, and Introduction to Life Science.

Sri Kurniati HANDAYANI

Department of Biology, Faculty of Science and Technology

Address: Universitas Terbuka, 15418, Tangerang Selatan, Indonesia

Phone: +62-21-7490941, extension 1810

E-mail: skurniati@ecampus.ut.ac.id



Fawzi Rahmadiyan ZUHAIRI, S.Si., M.Sc., is an assistant professor in Biology Department, Universitas Terbuka (UT). Currently, he teaches online tutorial in Cell Biology, Genetics, and Plant Physiology. Fawzi obtained his bachelor's degree in Institut Teknologi Bandung and performed his research project on influenza virus internalization into Vero and MDCK cell. Later, he pursued his master's degree in University of Oslo, characterizing a novel human methyltransferase (METTL13) in his final project. His research interest ranging from molecular cell biology, biochemistry, and bioinformatics. Since working in Universitas Terbuka, he also has an interest in studying distance learning in science. He currently works in UT's regional office in Jayapura, Papua.

Fawzi Rahmadiyan ZUHAIRI

Department of Biology, Faculty of Science and Technology

Address: UPBJJ Universitas Terbuka Jayapura, Jl. SPG Teruna Bhakti Waena, Kotak Pos 204, Abepura Jayapura Papua 99358.

Phone: +62-967-571447, extension 120

e-mail: fawzi.zuhairi@gmail.com, fawzi.zuhairi@ecampus.ut.ac.id.

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