



## Comparing Self-Directed Online Learning Between Nursing and Non-Nursing Students During Novel Corona Virus-2019 Pandemic in Indonesia: A National Web-Based Survey

Taryudi<sup>1\*)</sup>; Linlin Lindayani<sup>2</sup>; Irma Darmawati<sup>3</sup>

<sup>1\*)</sup> Faculty of engineering, Universitas Negeri Jakarta

<sup>2</sup> Department of nursing, Sekolah Tinggi Ilmu Keperawatan PPNI Jawa Barat

<sup>3</sup> Faculty of Sports and Health Education, Universitas Pendidikan Indonesia

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### ABSTRACT

A novel coronavirus outbreak (2019-nCoV) caused all universities to work online and all students study from home to control the transmission of 2019-nCoV. This study investigated self-directed online learning among university student during the corona virus-2019 pandemic in Indonesia. A web-based survey was conducted to collect data using the Self-Directed Learning Instrument (SDLI). A total of 793 respondent (response rate: 98.5%) joined in this study. Over 70% of students experienced difficulty using a learning management systems. The mean total of self-directed learning was significantly higher in nursing students than non-nursing students ( $78.75 \pm 9.66$  vs.  $77.35 \pm 8.06$ ,  $p$ -value=0.008, respectively). Both groups showed the highest percentage of perception of successes and failures inspire me to continue learning (90%) and having strong hope to constantly improve and excel in their learning (86%). It's very important for the university to develop a better e-learning system and design intervention to improve students' self-directed learning.

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## Pembelajaran Online Mandiri Antara Mahasiswa Keperawatan dan Non-Keperawatan Selama Pandemi Novel Covid-19 Di Indonesia: Survei Nasional Berbasis Web

### ABSTRAK

Wabah coronavirus baru (2019-nCoV) menyebabkan semua universitas bekerja online dan semua siswa belajar dari rumah untuk mengendalikan penularan 2019-nCoV. Penelitian ini menyelidiki pembelajaran online mandiri di kalangan mahasiswa saat terjadi pandemi virus corona 2019 di Indonesia. Survei berbasis web dilakukan untuk mengumpulkan data menggunakan Self-Directed Learning Instrument (SDLI). Sebanyak 793 responden (tingkat tanggapan: 98,5%) bergabung dalam penelitian ini. Lebih dari 70% siswa mengalami kesulitan untuk menggunakan sistem manajemen pembelajaran. Rata-rata total pembelajaran mandiri secara signifikan lebih tinggi pada mahasiswa keperawatan daripada mahasiswa non-keperawatan ( $78,75 \pm 9,66$  vs  $77,35 \pm 8,06$ ,  $p$ -value=0,008, masing-masing). Kedua kelompok menunjukkan persentase tertinggi dari persepsi keberhasilan dan kegagalan menginspirasi saya untuk terus belajar (90%) dan memiliki harapan yang kuat untuk terus meningkatkan dan unggul dalam pembelajaran mereka (86%). Sangat penting bagi universitas untuk mengembangkan sistem e-learning yang lebih baik dan merancang intervensi untuk meningkatkan pembelajaran mandiri siswa.

#### Kata kunci:

Perawatan  
Pembelajaran Mandiri  
Mahasiswa  
nCov-2019  
Pembelajaran online

#### <sup>\*)</sup> corresponding author

Faculty of engineering, Universitas Negeri Jakarta, Jakarta, Indonesia

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## INTRODUCTION

A novel coronavirus outbreak (2019-nCoV) that started in Wuhan, China, has spread rapidly, with cases currently confirmed in multiple countries (WHO, 2020a). A total of 1,794,819 cases were registered in at least 213 countries as of 12 April 2020 (WHO, 2020b). In Indonesia, as of 12 April 2020, the Government of the Republic of Indonesia has reported 4,241 confirmed cases in at least 17 province and 373 deaths related to 2019-nCoV, while 359 patients have recovered from the disease (National Disaster Management Authority, 2020). The Republic of Indonesia's Ministry of Health (MoH) has taken action to improve response efforts for 2019-nCoV, responding to preliminary guidelines from the WHO on the novel coronavirus (National Disaster Management Authority, 2020). Since 17 March 2020, the Government of Indonesia has released a policy for all institutions to work and study from home to control transmission of 2019-nCoV (National Disaster Management Authority, 2020).

Technology now plays a significant role in driving creativity and influencing the educational experience of the students. The way information is collected and used has significantly improved over the last years, because it became available from several sources (Tekkol & Demirel, 2018). Online platforms have greatly increased the self-directed opportunities to learn for all internet related learners (Bonk & Lee, 2017; Kim et al., 2014; Zhang et al., 2019). When learning strategies and methods continue to evolve, an understanding of educational methodologies themselves, as well as those who use them for teaching and learning, is essential to optimizing educational productivity (Jackson et al., 2018). However, earlier study reported that studying in free online classes is impressive but is also challenging for students, as learning information is delivered through educators to students (Fournier et al., 2014). Students could be uncertain of what to do next without teacher guidance, as well as confused by inexperienced learning responsibilities in digital platforms. In fact, online educational scholars suggested that students require self - directed learning skills to effectively learn online (Conrad & Donaldson, 2011; Dynan et al., 2008).

Self-directed learning is a basic requirement for life-long learning and a way to transform individuals into life - long learners (Candy, 1990; Greveson & Spencer, 2005). Self-directed learning is a primary subject of study and application in adult learning (Garrison, 1997). Moreover, development as self-directed learners were already emphasized throughout the curriculum from both universities and colleges. Self-directed learning in its largest context relates to the capability of persons to take initiatives to evaluate their specific learning outcomes, their capacity to decide their learning goals, their ability to define the resources they really need know, their option to pick / utilize appropriate teaching strategies and their ability to analyze educational outcomes even without external help (Knowles, 1975). Through lifelong learning, people will become conscious on their own learning needs and determine how they would like to gain knowledge (Tekkol & Demirel, 2018).

Many research on self-directed learning have been carried out in international studies and several curriculum research have been carried out evaluating self-directed learning skills (Cadorin et al., 2017; Fisher et al., 2001; Guglielmino, 1977; Hendry & Ginns, 2009; Lopes & Cunha, 2017; Oddi, 1987; Shen et al., 2014; Stockdale & Brockett, 2011; Williamson, 2007). Some research have also proposed models for undergraduate students development (Aly et al.,

2003; Beach, 2017; Mamary & Charles, 2003; Sawatsky et al., 2017). Previous research results have also shown that self-directed learning has much to do with abilities such as imagination, problem-solving and upper-level critical reasoning. Additionally, previous study on self-directed learning focused on traditional face-to - face classes and virtual educational settings (Luo et al., 2018; Sumuer, 2018). Accordingly, independent study, therefore, if students are not busy taking lectures and have much more time to exercise (e.g. during pandemic break) can contribute to acquiring practical and experience. However, online learning or working are not a common condition in Indonesia. Although, Indonesia has been ranking a the 6<sup>th</sup> largest of internet users in the world, the majority are using only for social media and little has used application for use to work or study or delivered some information through teleconference. Given this research gap, the present study investigates self-directed learning among nursing student compared to non-nursing students during corona virus-2019 pandemic in Indonesia.

## METHOD

### *General information*

This study procedure was written in accordance with the SURGE survey research reporting guidelines (Bennett et al., 2010). Students from universities who agreed to join in this study were recruited for the current descriptive cross-sectional study. All schools were registered with Republic Indonesia Ministry of Education. A closed-ended, web-based survey was applied to collect the information on self-directed learning. The inclusion criteria in this study were (i) a student at all grades; (ii) acknowledging the informed consent given before survey is completed. Participation was anonymous and voluntary. Before the survey was conducted, permission to participate was obtained. Considering the online nature of the study, all respondents will check a clear box to make sure they fully clearly understood all the information on the introduction page before they can participate. The Affiliated Institutions Board of Review has agreed. This study has been approved by the institutional Review Board of the affiliated institutions.

### *Instrument*

The questionnaire was composed by two sections: 1) demographic characteristics section and 2) self-directed learning. Self-directed learning was measured using the Self-Directed Learning Instrument (SDLI) developed by (Cheng et al., 2010). This instrument consists of 20 questions in 4 domains: learning motivation, planning and implementation, self-monitoring and interpersonal communication. Learning motivation is defined as the internal strength of the learner and also the external stimulates which encourage the desire to learn and assume ownership of the learning. Planning and implementation is viewed as the process to independently adjust learning priorities, and to use appropriate planning strategies and tools to effectively achieve instructional goals. Self-monitoring is defined as being capable of evaluating and making any progress about one's procedures and implications. Interpersonal communication is interpreted as the capability of the students to interact among themselves in attempt to facilitate their own knowledge acquisition. Consisting of Likert scale one to five, one shows disagree

while five shows strongly agree. This instrument has been translated into Indonesian using forward and backward methods and then the content validity was done through experts in the field of nursing. Based on the results of the 5th content validity of experts in the field of nursing education with a minimum of master degree, the value of the content validity index (CVI) was 0.83. This instrument has a good Cronbach's alpha value, 0.916 for the total score, with a range from 0.765 to 0.866 for each domain.

#### Survey administration and timeline

After brief presentation of the study protocol an online survey was given to all students. The survey was accessible in a dedicated and secure weblink for three weeks after the students studied from home from 1<sup>st</sup> to 10<sup>th</sup> April 2020. Under the study protocol, three notifications for participation have been sent by e-mail and social media. Figure 1 summarizes the sequence of all procedures. The response rate was 98.5%.

#### Data collection and statistical analysis

Google was gathering confidential information during the entire procedure. Information was stored on a different drive that only the management team can access. The software automatically addressed the possibility of the double participants by hindering two or even more access permissions from the same e-mail address to the survey, if the questionnaire was already finished. The data has been translated to codebook. A mean, standard deviation,

frequency were used for presenting the results. Chi-square and student t test were used to compare self-directed learning and demographic characteristics between nursing and non-nursing students.

## RESULTS

A total of 793 respondent (98.5%) agreed to join in this study, with 78.3% were nursing students and 21.7% non-nursing students. Non-nursing students including students from others healthcare professions such as midwifery, public health, education, engineering, social and politics, and communication. Over 90% of the participants were female, and most of them (76.5%) were studying at private university for nursing students and at public university for non-nursing students. The majority of study participants were at second (25.8%) year of study and 67% both nursing and non-nursing students with bachelor program. The mean age of participants was 20.24 (SD=7.34) years for nursing student and 19.79 (SD=1.15) for non-nursing students. Over 70% of students in both groups experienced a difficulty to use a learning management systems during pandemic. Our qualitative data showed that the majority of this difficulty due to the poor connection and financial burden to buy internet quota that on average almost more than USD 4 to 8 per week. There were significant differences between nursing students and non-nursing students in term of gender, university status, study years, and level of study (Table 1).

**Table 1**  
**Comparison demographic characteristics between nursing and no-nursing students (n= 793)**

	Nursing student (n=621) (%)	Non-nursing student (n=172) (%)	p-value
Age (years), Mean ± SD	20.24±7.34	19.79±1.15	0.457
Gender			
Male	59 (9.5)	48 (27.9)	<.0001
Female	562 (90.5)	124 (72.1)	
University status			
Public	146 (23.5)	93 (54.1)	<.0001
Private	475 (76.5)	79 (45.9)	
Study year			
1	223 (35.9)	40 (23.5)	<.0001
2	160 (25.8)	78 (45.9)	
3	109 (17.6)	42 (24.7)	
4	129 (20.8)	10 (5.9)	
Level of study			
Diploma III	200 (32.3)	29 (16.9)	<.0001
Bachelor	421 (67.8)	143 (83.1)	
Difficulty using learning management system (LMS) during pandemic			
Yes	475 (76.5)	121 (70.3)	0.099
No	146 (23.5)	51 (29.7)	
Difficulty level using LMS during pandemic	3.22±0.90	3.27±0.85	0.495
Budget to buy internet quota per week			
< USD 4	169 (27.5)	54 (32.3)	0.218
USD 4-8	446 (72.5)	113 (67.7)	

Table 2 shows comparison self-directed learning between nursing and no-nursing students. The mean total of self-directed learning was significant higher in nursing students than non-nursing students (78.75±9.66 vs. 77.35±8.06, p-value=0.008, respectively). In the domains of self-directed learning, nursing students have higher score of

planning and implementation (22.61±3.03 vs. 21.66±3.45, p-value=0.001) and interpersonal communication compared to non-nursing students (16.81±3.23 vs. 15.59±2.15, p-value=0.001). However, learning motivation was higher in non-nursing students than nursing students (24.45±2.81 vs. 23.77±3.29, p-value=0.015, respectively) (Table 2). We

conducted bivariate analysis found the significant difference of total score of self-directed learning in study years,

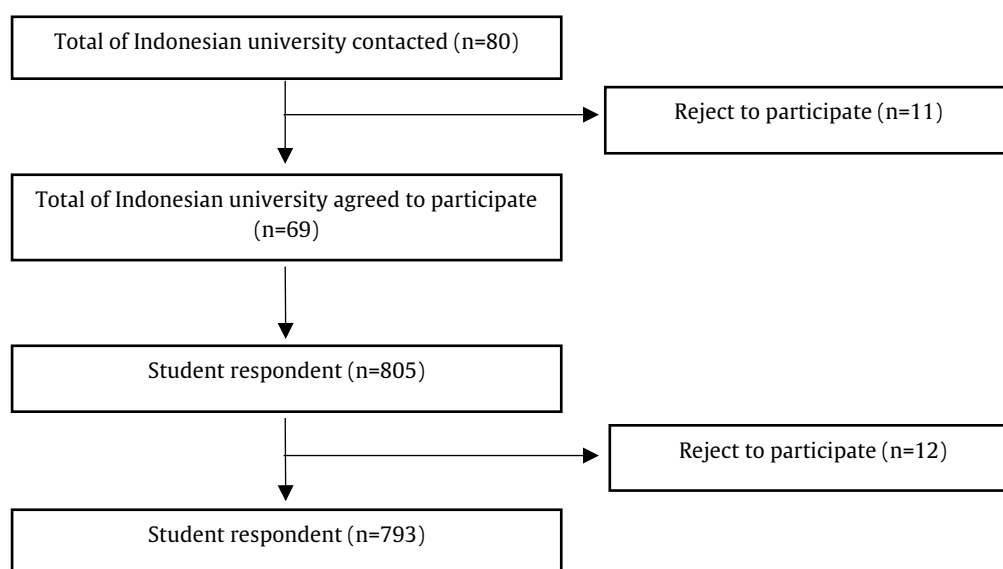
whereas first year's students have higher score than fourth-year students.

**Table 2**  
**Comparison self-directed learning between nursing and no-nursing students (n= 793)**

	Nursing student (n=621) Mean ± SD	Non-nursing student (n=172) Mean ± SD	p-value
Total score	78.75±9.66	77.35±8.06	0.008
Learning motivation	23.77±3.29	24.45±2.81	0.015
Planning & implementation	22.61±3.03	21.66±3.45	0.001
Self-monitoring	15.56±2.38	15.65±2.45	0.666
Interpersonal communication	16.81±3.23	15.59±2.15	0.001

Figure 1. Shows items exploration self-directed learning in nursing students. In nursing students, the highest percentage of items self-directed was their perception of Successes and defeats encourage me to continue learning (90%), followed by a deep expectation of continually improving and excelling in their learning (86%), and their appreciation of my learning abilities and limitations (81%).

Between non-nursing students, their understanding of achievements and setbacks motivated to start studying (94%) was the highest proportion of self-directed items, accompanied by high expectation of continually progressing and excelling in their learning (93.4%), and desire to associate new information with their very own lived experience (84.4%) (Figure 3).



**Figure 1.** Study Flow Chart

**DISCUSSION**

This study was the first study to explore self-directed online learning during pandemic 2019-nCoV in Indonesia. The overall students' average self-directed online learning score was ranged from 77 to 78, which indicate moderate self-direction. A recent study reported that many of students have average score of self-monitoring of self-directed learning in relation to use to massive open online learning course (Zhu et al., 2020). The moderate self-directed learning may due to many students did not ready to study from home during pandemic, limited access to the internet connection, as many of students reported having difficulty in using online learning management systems as used in each university. Furthermore, in many universities, the used of hybrid learning methods is still limited, with the majority is teaching or study in the classroom (Zainuddin & Perera, 2018). Therefore, it is very important for the university to develop better e-learning system in Indonesia that is useful and easy to use not only for daily used but also to prepare for unexpected event such as pandemic. Moreover, in support to the ministry of education policy published in January 20<sup>th</sup>,

2020 regarding the freedom for study, intervention to improve students' self-directed learning is imperative to develop in each university.

In nursing students, self-directed learning was higher than that of non-nursing students. The identified self-directed learning discrepancies between nursing and non-nursing students in this study may be due to the significant changes that might occur in nurse education, especially problem-based learning tutorials, on the self-directed learning performance of the students and make them more confident with their study (Leatemia et al., 2016). Previous research also acknowledged the effect of tutorial interaction, evaluated content, and self-directed learning outcomes module / scenario (Kidane et al., 2020). (Leatemia et al., 2016) reported that students apply their past experiences in problem-based learning lessons to clarify the scenarios and draw on newly acquired knowledge that used a hypothetical-deductive approach. Learners should have a diverse teaching and learning environment so that they can start exploring the possibilities for understanding flexibly (Dolmans et al., 2005; Murat Yalcin et al., 2006). Nonetheless, lack of tutorial competence can lead towards

less commitment and much more negative actions in the students. It is also proposed that tutorial planning boost the

tutor's understanding of problem-based learning and human reasoning and tutorial abilities.

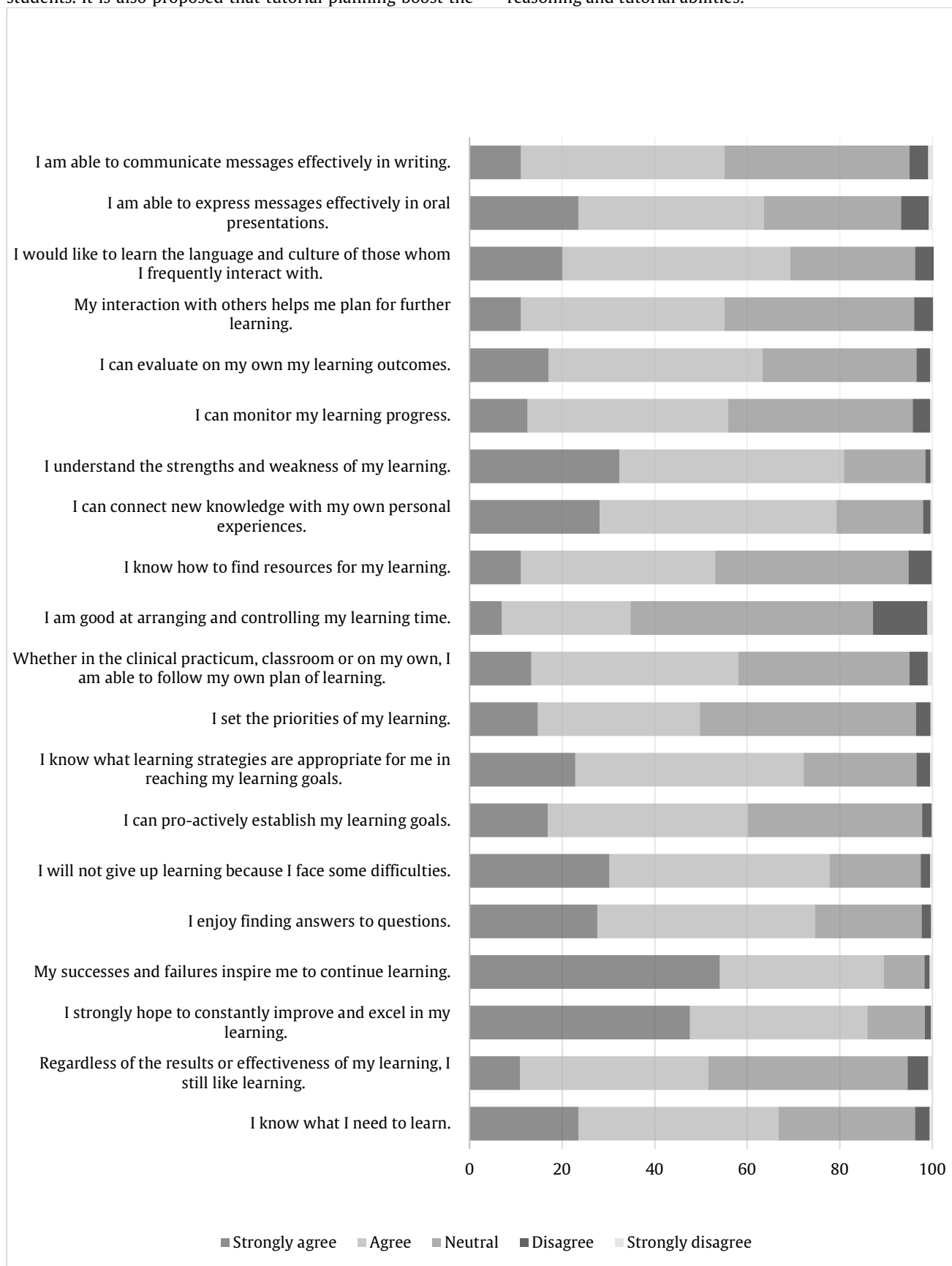
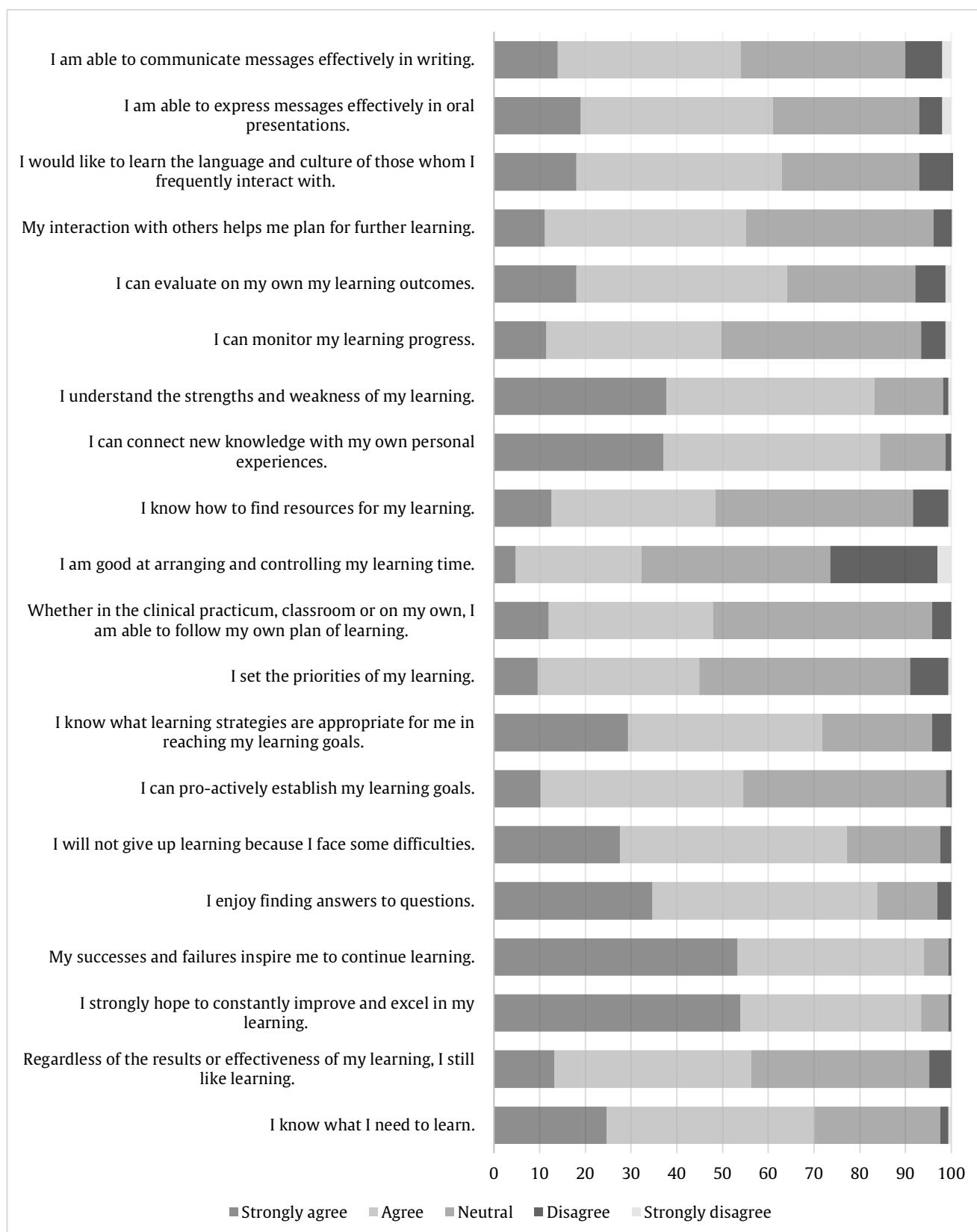


Figure 2. Item exploration of self-directed learning in nursing students (n= 793)



**Figure 3.** Item exploration self-directed learning in non-nursing students (n= 793)

Student learning motivation was lower in nursing students. Previous study shows that independent learning needs guidance and support (Fournier et al., 2014; Wolters, 2011). Some investigators suggest that inspiration affected e-learning skills and the metacognitive and cognitive techniques of students (e.g. way to set instructional goals

and objectives their learning improvements), which in impact significantly impacted their behaviors (e.g. time management and understanding continuing to search) in sequential order. (Kim et al., 2014; Terras & Ramsay, 2015; Zhu et al., 2020). The impact of various sources of support on learning have been thoroughly investigated in different

academic contexts (Deci & Ryan, 2008), involving efficiency, task-orientation and intrinsically and extrinsically encouragement (Crippen et al., 2009; Joo et al., 2013);. In addition, previous study found that self-directed learning preparation represented a key role in future observations of students' preferences for online education contexts (Yang et al., 2014; Zhou & Li, 2020). Notably, many students perceived achievements and failings that motivate them to begin studying and have great hopes of continually improving their skill and excelling it. This finding contributes to these work by indicating that students have to be inspired during online education as just a means of increasing the self-monitoring ability of the student.

### Limitations of the Study

There are some limitations to the research. The present research explains the self-directed learning of the students from one point, without continuing their development. Over the academic year and throughout the years, students could better assess the success of getting self-directed learning than a cross-sectional analysis. However, since self-directed learning was measured by the students themselves, the reliability of the results may be reduced. Potential studies will recognize the shortcomings found in the present study to explore thoroughly the self-directed learning ability and advantages of hybrid educational technologies for students to tackle comprehensively.

### CONCLUSION

In conclusion, this study found a moderate level of student directed online learning during NCoV-2019 pandemic in Indonesia. We found that nursing students have higher planning and implementation, interpersonal communication but lower learning motivation compared to non-nursing students. It's very important for the university to develop better e-learning system in Indonesia that is useful and easy to use not only for daily used but also to prepare for unexpected event such as pandemic and design intervention to improve students' self-directed learning. Furthermore, future research should consider to explore dynamic change of self-directed learning using a longitudinal approach.

### Declaration of competing interest

All authors declare no competing interests.

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