
TRENDS IN THE LEARNING STYLE OF AVIATION POLYTECHNIC CADETS DURING DISTANCE LEARNING

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ABSTRACT

In the era of education 4.0 which is characterised by the use of digital technology, the learning process is no longer limited to space and time. This allows the implementation of distance learning as a springboard for a new educational model. The Surabaya Aviation Polytechnic is a vocational education institution under the supervision of Direktorat Kelaikudaraan dan Pengoperasian Pesawat Udara (DKPPU). It is an airworthiness and operation authority, has issued a letter regarding the online learning system method due to the covid pandemic. One of factors that determine the success of learning is the use of appropriate learning media. The choice of learning media influenced by the characteristics of the learner. Therefore, it is important to know the learning styles of students. Thus, this study aims to determine the learning style tendencies of Surabaya Aviation Polytechnic cadets to obtain recommendations for selecting the right media in distance learning. The data collection process involved 900 cadets who were asked to fill out a learning style questionnaire which would later be analysed quantitatively. For data triangulation, interview sessions were also held for selected cadets. From the results of data analysis, it was concluded that the Surabaya Aviation Polytechnic cadets tended to have visual learning styles (54% or 485 cadets) and auditory (13% or 121 cadets). So, the media recommendations are audio/video tutorials, interactive multimedia, and simulator software. However, a total of 126 cadets do not know their learning styles. They need to be assisted in-class during class learning to increase achievement motivation.

Keywords: Instructional Media, Learning style, Vocational Education

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INTRODUCTION

Nowadays, education is entering the 4.0 era where the learning process is integrated with the use of digital technology (Himmetoglu, Aydug, and Bayrak 2021; Motta Reis, J. S. D., Ferreira Costa, A. C., Espuny, M., Batista, W. J., Francisco, F. E., Gonçalves, G. S., ... & Oliveira 2020; Ramírez-Montoya et al. 2021). Due to the great role of technology, the teaching and learning process is no longer limited to place and time. This means that the learning process can not only be carried out in the classroom and during study hours but allows the implementation of distance learning as a springboard for a new educational model. The challenge is a change in the

way students learn, their mindset, and how to act in developing creative innovations in various fields in the Education 4.0 era.

Aviation Polytechnic of Surabaya is a vocational college under the ministry of transportation that implements a boarding school by providing dormitories, so cadets are 24 hours on campus to carry out a series of academic - non-academic activities in the context of the excellent physical formation and ethical and professional mentality. During the covid pandemic, in compliance with the health protocol to maintain distance, the Surabaya Aviation Polytechnic applied the campus on/off rules. Aviation vocational education has provisions for fulfilling competencies as stated in CASR 147-02. So, the Directorate of Airworthiness and Aircraft Operations (*Direktorat Kelaikudaraan dan Pengoperasian Pesawat Udara* or DKPPU) as the airworthiness and aircraft operation authority has issued letter No. AU.408/15/12/DKPPU-2020 regarding the Online Learning System Method. This policy was followed up by aviation vocational education providers holding AMTO approval by revising the Training Procedure Manual Re-issued 2 Rev 0 dated April 21, 2020 Chapter 3 regulates the procedures for administering education with an online system. One of the factors that play a role in contributing to a successful learning is the use of appropriate learning media (Puspitarini and Hanif 2019; Wargadinata et al. 2020; Widodo and Wahyudin 2018). All types of media used to transfer information in the teaching and learning process to get students' attention and interest in learning can be referred to as learning media (Gatot Margisal Utomo, Bramianto Setiawan, Reza Rachmatdullah 2021; Lalian 2018; Nicolaou, Matsiola, and Kalliris 2019). According to the Circular of the Secretary General of the Ministry of Education and Culture in the guidelines for the implementation of Distance Learning, learning media in the online learning model are grouped into 4, namely text format media, audio-video media, interactive multimedia media, and simulation software media.

The selection of instructional media must be influenced by instructional objectives, effectiveness, students, availability, procurement costs, and technical quality (Garris, Ahlers, and Driskell 2002; Guan, Song, and Li 2018; Wu and Song 2019). Students who as learning subjects must play an active role to able to construct learning experiences in the form of changes/developments in both the cognitive, affective, and psychomotor domains (Alexander and Boud 2018; Bereiter and Scardamalia 2018; Comi et al. 2017; Doyle 2018; Hindmarch, D., Machin, L., Murray, S., Richardson, T., Walmsley-Smith 2020). Therefore, it is important to know the characteristics of students' learning styles to achieve successful learning (Al-Azawei, Parslow, and Lundqvist 2017; Buckley and Doyle 2017; Hsu 2017). According to (De Porter, B., & Hernacki 2000), students' learning styles tend to be divided into Visual, Auditory, Kinaesthetic, and their combinations. Thus, this study aims to determine the learning style tendencies of

Surabaya Aviation Polytechnic cadets to obtain recommendations for selecting the right media in distance learning.

METHOD

This research is quantitative with data collection techniques in the form of a learning style questionnaire. To obtain data on the learning styles of cadets during distance learning, a questionnaire consisting of 36 closed questions was adapted (12 questions each for visual, auditory, and kinaesthetic learning styles). Before being used, the questionnaire was validated by a Learning Expert Lecturer. The process of giving a questionnaire online via google form to 900 cadets, with details: 106 Aeronautical Communication Cadets, 68 Air Traffic Controller Cadets, 175 Air Transport Management Cadets, 121 Airport Civil Engineering Cadets, 111 Airport Electrical Engineering Cadets, 97 Air Navigation Engineering Cadets, And 222 Aircraft Maintenance Engineering Cadets. The research was conducted in the 2022 academic year at the Surabaya Aviation Polytechnic. After the data collection process, quantitative data analysis was carried out using Microsoft Excel software. For data triangulation, interview sessions were conducted on several selected cadets (purposive sampling).

RESULTS AND DISCUSSION

From the results of the data analysis of the cadet learning style questionnaire, the following data were obtained:

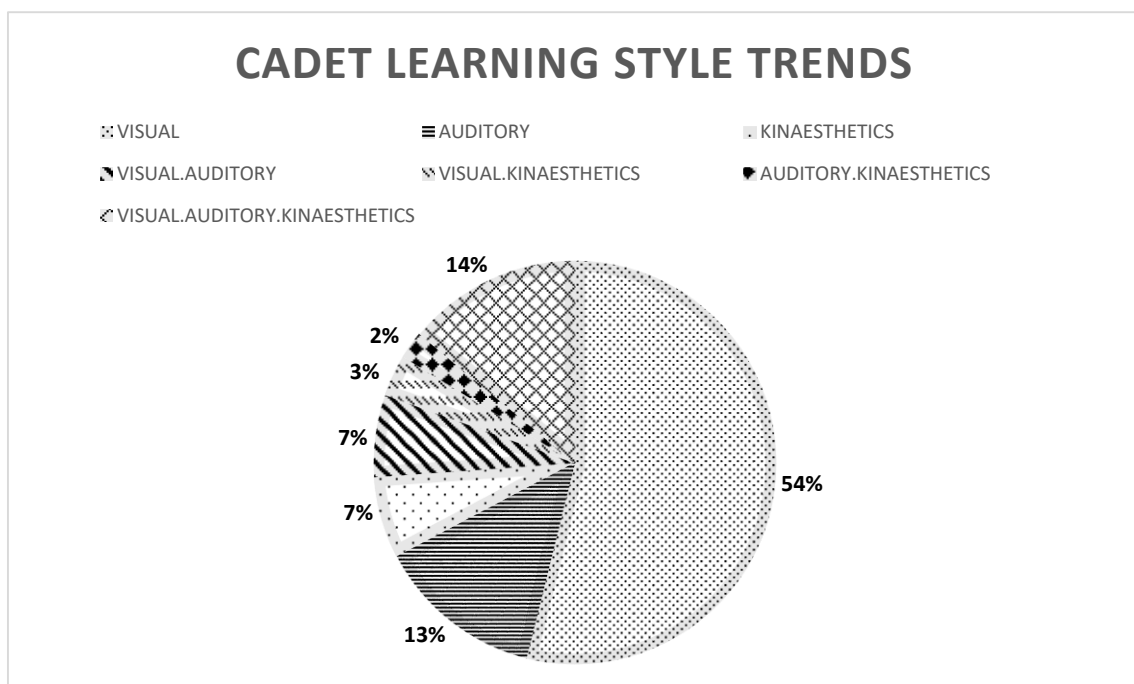


Figure 1. Cadet Learning Style Trends

If viewed as a whole (Figure 1), the characteristics of the Surabaya Aviation Polytechnic vocational education cadets tend to be dominated by visual learning styles with 54% and the other 13% having auditory learning styles. If observed, the cadets of the Surabaya Aviation Polytechnic tend to like the visual learning style. This is because aviation vocational education has educational characteristics that shape cadets to work according to procedures, techniques, and rules. Another fact was found, it turned out that 14% or 126 of 900 cadets did not know their learning style. Whereas success in a career can be achieved when a person understands his strengths and weaknesses. Therefore, a deeper approach to the cadets is needed during the learning process in the classroom. So that they are motivated to find out about how to study effectively for themselves.

Surabaya Aviation Polytechnic is an official university under the Indonesian Ministry of Transportation that acts as a Vocational Education Institute in the field of Aviation. There are 7 study programs at the Surabaya Aviation Polytechnic, including Air Traffic Controller, Aeronautical Communication, Air Transport Management, Airport Electrical Engineering, Air Navigation Engineering, Airport Civil Engineering, and Aircraft Maintenance Engineering. Furthermore, the characteristics of the learning styles of each study program will be described. Air Traffic Controller is a study program that educates cadets on the task of Air Traffic Guidance (both Ground to Ground and Ground to Air) using procedural control (Non-Radar). The task of flight operators safely and efficiently in air space, and can solve problems in certain situations with independent responsibility at a predetermined level. The cadets in this study program tend to have a visual learning style (as many as 60%). The 12% of 68 cadets have a combined visual and auditory learning style; the same percentage is also for those who do not know their learning style (see Figure 2). Air Traffic Controller is the study program that mostly deals with procedures because the CASR 143 regulation requires working to control the aircraft according to established regulations and rules. This is in line with the research results, which is 60% (the highest compared to other study programs).

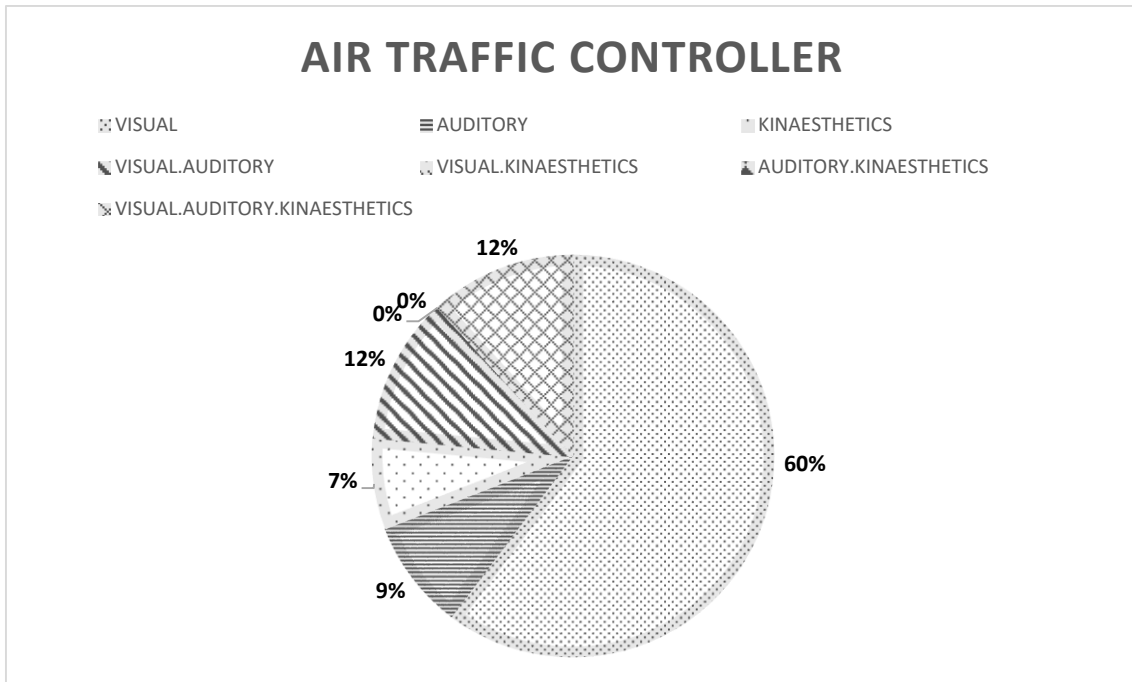


Figure 2. Air Traffic Controller Learning Style

Aircraft Maintenance Engineering is a study program that studies engine parts and aircraft frames to maintain and analyse engine problems or disturbances and repairs to aircraft engines if there is damage. From Figure 3, it can be interpreted that 222 cadets 59% have a visual learning style, 10% are auditory, and the remaining 13% do not know their learning style.

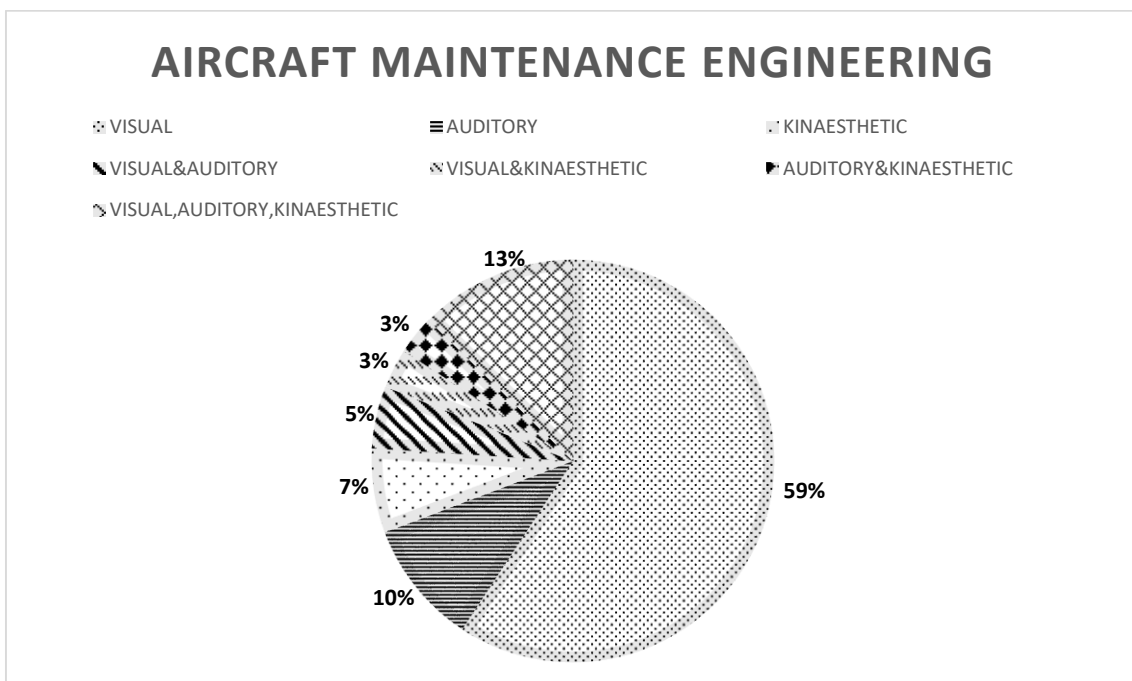


Figure 3. Aircraft Maintenance Engineering Learning Style

Aeronautical Communication is a study program that prepares cadets to be skilled in the distribution of ATS / Air Traffic Service Messages, especially in the use of AFTN (Aeronautical Flight Telecommunication Network) facilities. It is hoped that cadets in this study program can carry out their duties as personnel of Aeronautical Communications safely and efficiently and have socialisation and communication skills (effective communication, both oral and written). In addition, have the ability to work in a team with the value of diversity in knowledge about the profession and contemporary issues (social and global). From the analysis results (Figure 4), most cadets have a visual learning style (as many as 43%). It shows that 28% have an auditory learning style and 10% have a combination of visual and auditory, while 10% of the 106 Aeronautical Communication study program's cadets do not know their learning style.

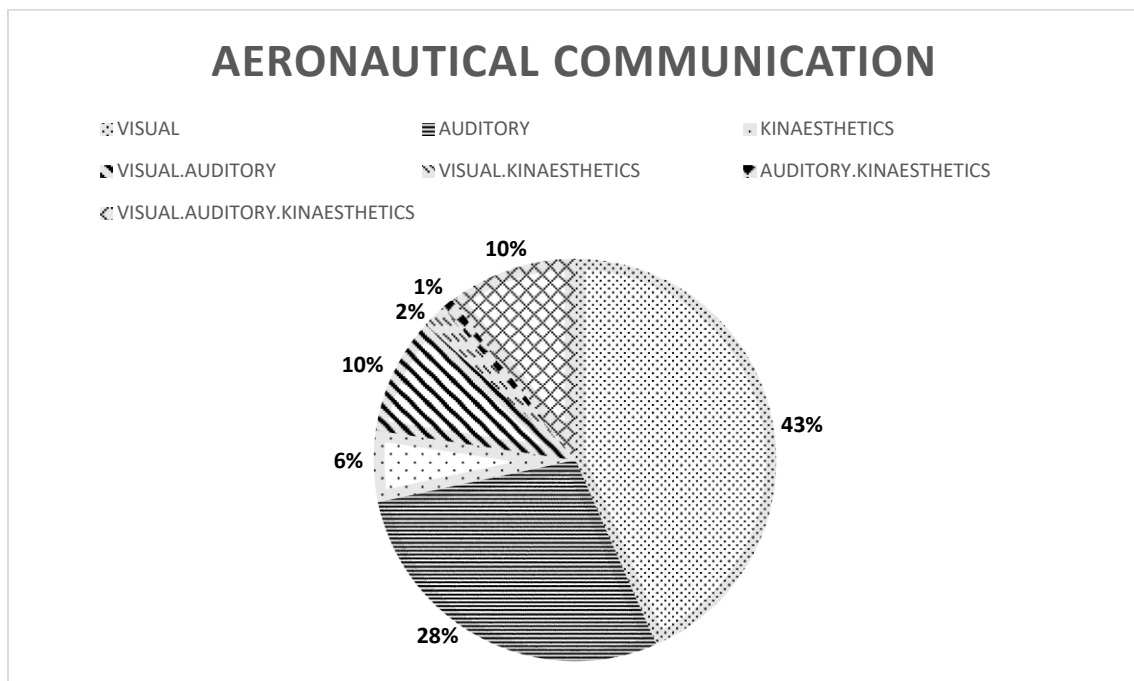


Figure 4. Aeronautical Communication Learning Style

The Air Transport Management study program, where cadets are trained in the transportation of goods (including dangerous goods), carry out the operation and maintenance of aviation security facility equipment. It is a means of supporting aviation, implementing flight plans, and carrying out Airline Reservations and Ticketing. From the analysis of Figure 5, the cadets of this study program tend to be dominated by visual learning styles (i.e. 53%). 10% of cadets have an auditory learning style, and 10% have a combined visual-auditory learning style. Another 13% are not clear about their learning style.

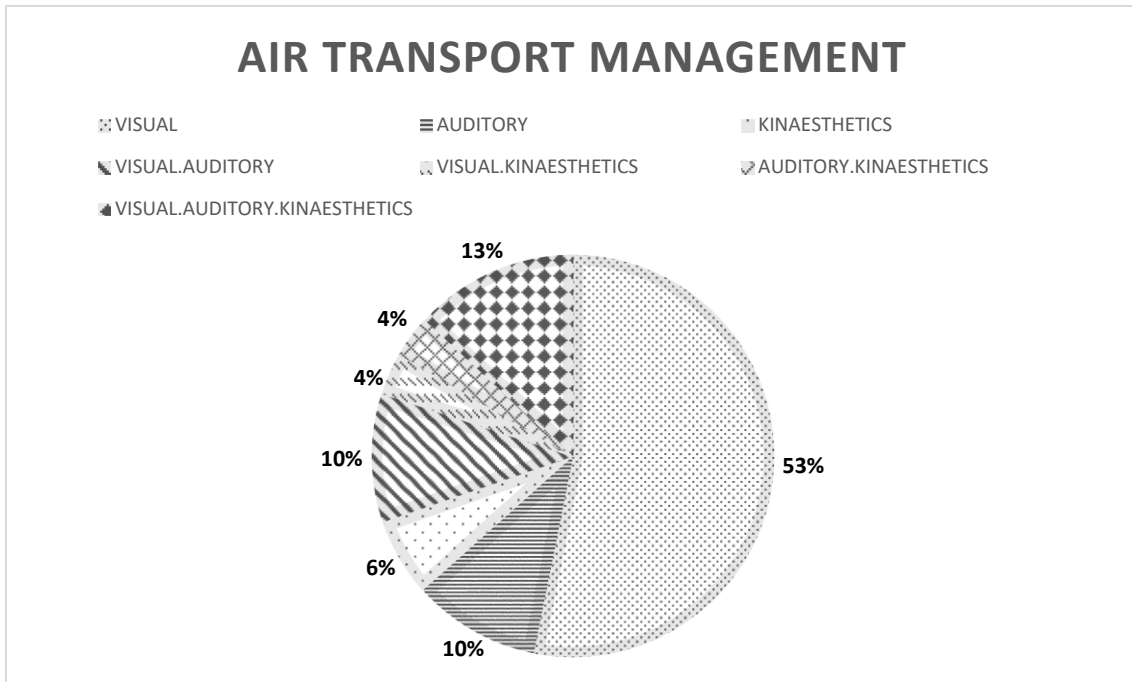


Figure 5. Air Transport Management Learning Style

Airport Electrical Engineering is a study program that studies the electrical system at airports and the electrical system in general. It is hoped that cadets can operate/maintain, repair disturbances/damages, and evaluate the performance of airport electrical facilities and equipment when applying their knowledge in the world of work. 58% of cadets in this study program have a visual learning style, 13% have an auditory learning style, and the remaining 16% do not understand their learning style (see Figure 6).

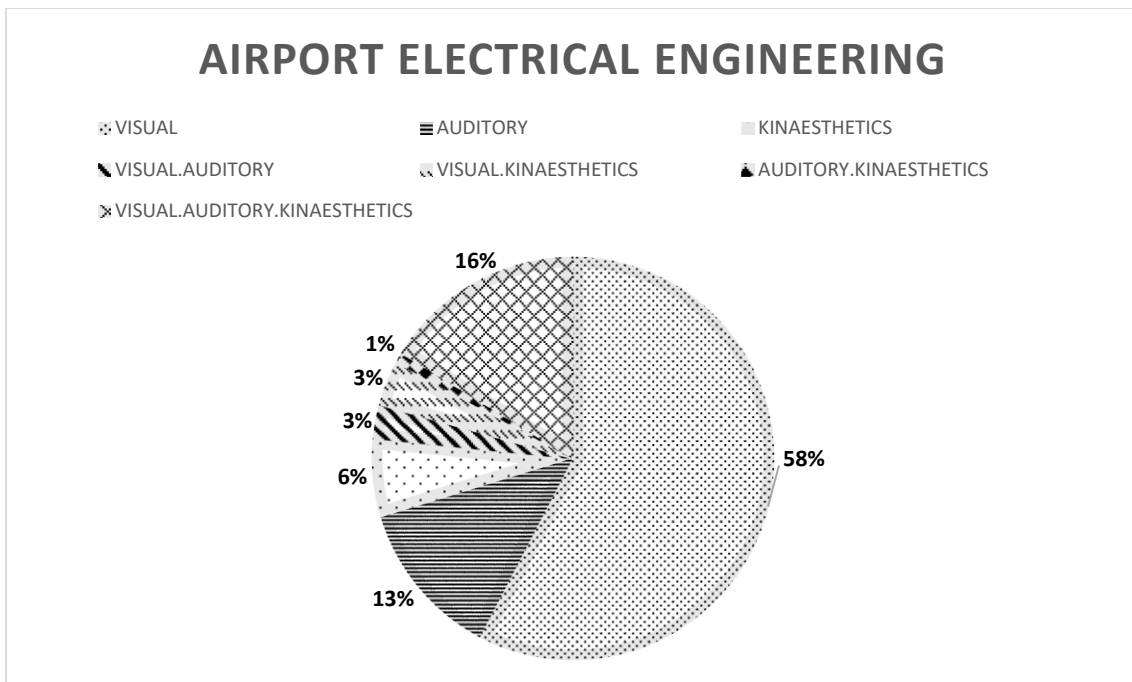


Figure 6. Airport Electrical Engineering Learning Style

Air Navigation Engineering study program is a place to train cadets' abilities in maintaining, operating, and analysing disturbances and damage, as well as repairing telecommunication and air navigation equipment such as radar, Doppler VHF Omni-directional Range (DVOR), Non-Directional Beacon (NDB), Instrument Landing System (ILS), and so on. This study program has 51% visual learning style cadets and 14% auditory learning style cadets. The remaining 13% of the 97 cadets do not know their learning style (see Figure 7).

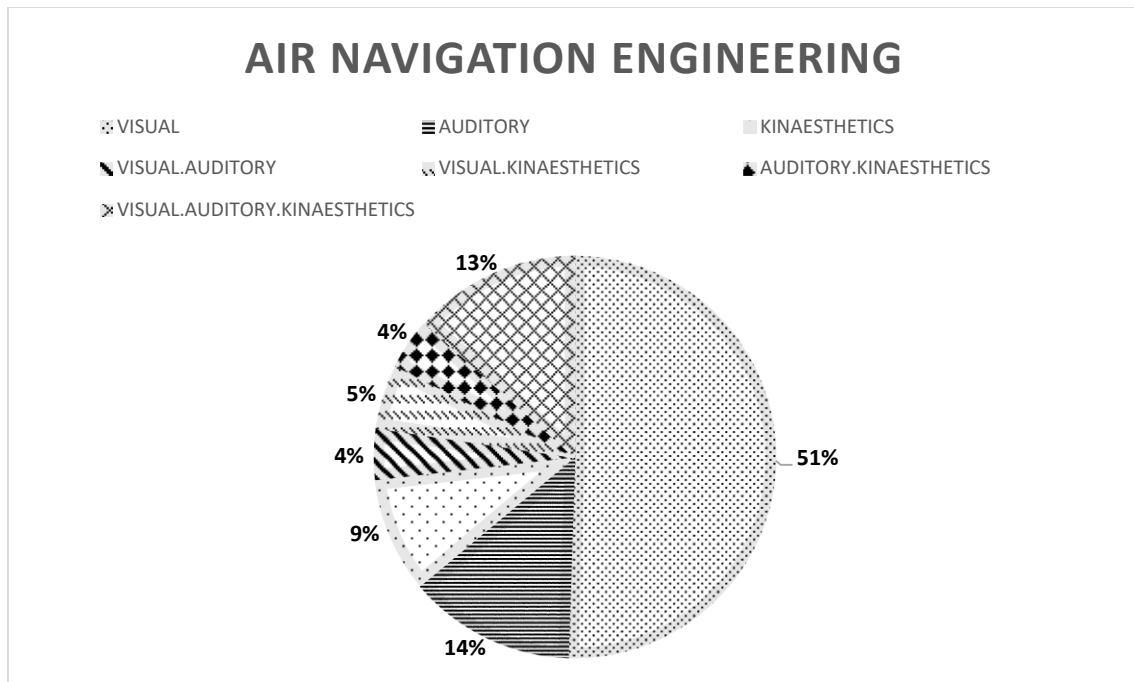


Figure 7. Air Navigation Engineering Learning Style

Airport Civil Engineering is a study program that studies the maintenance, management, and operation of land and airside facilities at airports, as well as supervising the construction or repair of airport buildings. From the learning style questionnaire analysis (Figure 8), 58% are visual learning style cadets, 14% are auditory learning style cadets, and the remaining 18% do not know their learning style.

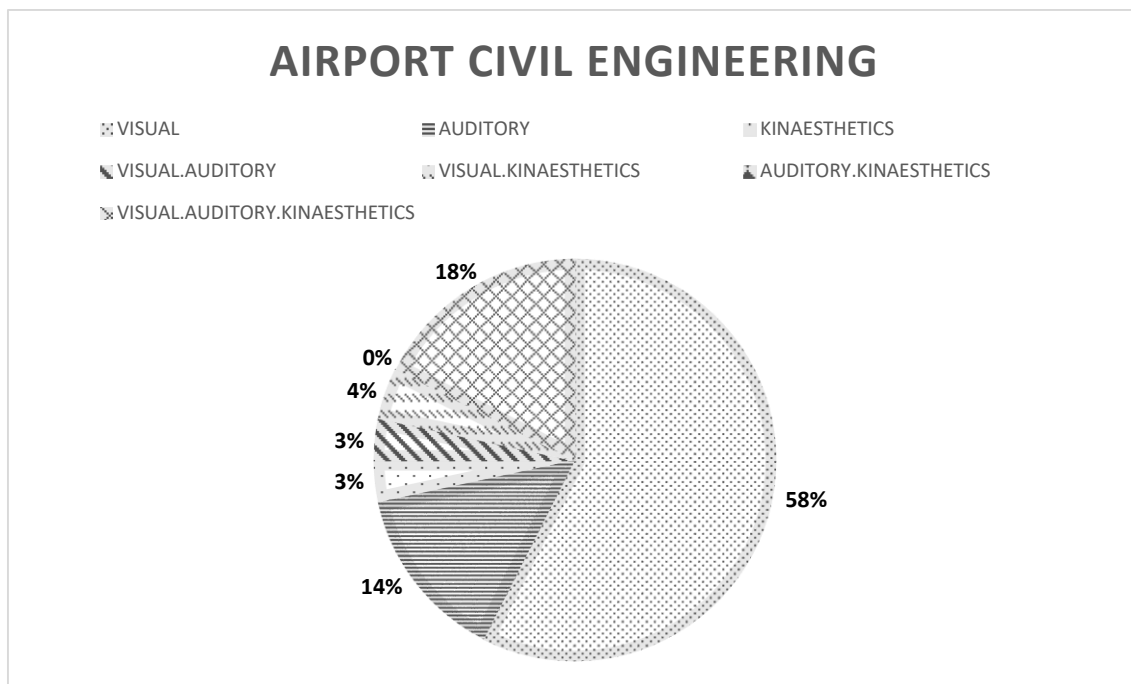


Figure 8. Airport Civil Engineering Learning Style

From the description of each study program above, Surabaya Aviation Polytechnic cadets tend to have a visual learning style. Students with visual learning styles usually absorb information using visuals or images, it can also be colors, maps, diagrams, and so on (Cuevas and Dawson 2018; Fleming Sreenidhi S K and Tay Chinyi Helena 2017; Joseph and Abraham 2017). Therefore, the role of learning media such as video tutorials, interactive multimedia, and simulation/simulator software, will be very helpful in the learning process. The second highest percentage of the cadets' favourite learning style is auditory. Auditory is very closely related to visuals (Deng et al. 2020; Özcan, Cupchik, and Schifferstein 2017; Wang and Zhao 2019), so the suggestions for learning media for this learning style are audio/video tutorials, interactive multimedia, and simulation/simulator software. However, if analysed further, it turns out that 14% of the 900 cadets from the entire study program still do not clearly understand the type of learning style. With this condition, it is necessary to provide more intense assistance to cadets so that they are motivated to learn to know how to study effectively to increase their academic potential. This treatment has also been applied to the research of (Long, Cummins, and Waugh 2014; Nicholls 2017; Wlodkowski, R. J., & Ginsberg 2017).

CONCLUSION

From the results of the discussion, it can be seen that cadet of Aviation Polytechnic (especially Surabaya Aviation Polytechnic) tend to have a visual learning style (as much as 54%) and an auditory learning style (13%). Therefore, in supporting the success of learning, it is

necessary to develop media that are in accordance with the cadets' learning styles, such as: audio/video tutorials, interactive multimedia, and simulation/simulator software. Cadets who do not know their learning style (14%) need to be assisted in-class learning so that they are more motivated to find effective learning strategies to improve achievement. It needs to be investigated in further research regarding cadets who are unsure about their learning style.

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