

The Influence of Advance Organiser and the Different Cognitive Styles of Higher Education Students

Muhammad Nasir^{a*}, Mohammad Salehudin^{b, a,b}Institut Agama Islam Negeri Samarinda, Indonesia, Email: ^{a*}muhammadnasirsadeke@gmail.com, ^bsalehudin@iain-samarinda.ac.id

Many learning models are designed to strengthen students' cognitive structures, however, none have used the right strategy. This study, therefore, aims to fill this gap by using the advanced organiser model (AO) and different cognitive styles (CS) as moderator variables. The quantitative approach, quasi-experimental, and the pretest-posttest non-equivalent 2x2 factorial designs were used to obtain data from 38 students divided into two small groups according to their cognitive style. Both groups were treated by administering teaching for four meetings, with the ANOVA used to analyse data and test hypotheses. The results showed that the subjects who were given the comparative organiser and a Field Dependent cognitive style (FD) achieved better and higher communication skills, respectively, with significant interactions between various types of advance organiser models.

Keywords: *Advance Organiser Model, Cognitive Style, ICT Communication Skills of Students.*

Introduction

Communication is one of the essential 21st century skills required for students to develop. This is due to its importance in conveying ideas, facts, and learning concepts (Oktafiani, Subali, & Edie, 2017) associated with the development of information and communications technology (ICT) (Iman, Isnaeni, & Ellianawati, 2020).

Therefore, creative and innovative teachers are needed to guide students' communication skills and cognitive abilities using several teaching models. Generally, the teacher delivers lectures, reads and provides study materials and assignments to students to integrate the material they have learned. Communication skills can play a major role in creating quality, and thus will provide strength in students' learning and interaction. According to Usodo (2011), cognitive style is one of the new learning ideas used to study the developmental and educational

psychology of students. It is also used to reflect students' thinking ability, attitude, motivation and interest in learning.

Meanwhile, communication skills are required to strengthen their interactive ability during lessons in higher education. Therefore, to create students with good communication skills in classroom lessons, this research uses the advanced organiser (AO) model and different cognitive styles. Previous studies stated that this model facilitates learning, retentive memory and influences students' communication skills (Stone (1983), Aggarwal & Woolleyb (2019), Holmes, Zhang, & Harris (2019), and Selman et al. (2017)).

Communication skills in teaching and learning are essential for those in authoritative and power positions (Kurtz, Silverman, Draper, Dalen, & Platt, 2006). Holmes et al. (2019), stated that all students showed a significant increase in written communication in the fields of organisation, development and expression, this was also realised in telephone conversations (Sheats, Hammond, & Kedrowicz, 2018).

A four-way analysis of variance was used to provide significant differences between cognitive styles in students' ability to retain, transfer and acquire proper learning skills (Satterly & Telfer, 1979). Therefore, it is important to conduct studies on the various advanced models used in textbooks, because these materials function as resources efficiently utilised to improve the learning achievement groups of students with Independent Field Cognitive Style (FI) and Field Dependent cognitive style (FD) (Şen (2018), Willerman & Mac Harg (1991), and Fudo'il, Degeng, & Sitompul (2019)).

Extensive literature exists on the experience and meaningful learning of the topic. This study is quite informative and tends to answer questions related to students' cognitive styles using an advanced organiser model to supplement the study material in order to provide meaningful learning and improve their communication skills.

Based on the background of the study, the following questions were formulated: (1) Are there differences in students that learn curriculum development using advance organisers to improve their communication skills? (2) Are there differences in students that learn curriculum development using cognitive styles on communication skills? (3) Are there significant interactions between the different types of advance organiser models and the different cognitive styles of communication skills?

Literature Review

Advance Organiser

The Advance Organiser Model is a teaching approach that allows teachers to convey large amounts of information meaningfully and efficiently (Downing, 1994). According to Ausubel, AOM) is also a theoretical information processing for meaningful verbal learning that occurs in situations where the material conveyed is related to existing cognitive structures (Bency & Nagarajan, 2012). Learning using advance organisers makes memorisation more meaningful. Therefore, students are able to understand the concept more effectively and efficiently. It consists of 3 steps, namely percentage, organising and strengthening thinking ability (Sapta, 2017). Students tend to feel satisfied when learning and teaching in the classroom are arranged to be dynamic without much control from the teacher. Therefore, the learning process is not merely by memorising concepts or facts. However, it is by trying to connect the ideas to produce a complete understanding. This is because humans are significantly more able to absorb and sustain meaningful learning (Willerman & Mac Harg, 1991).

Joyce, at all (2015), reported that there are two types of AO, namely expository and comparative organisers. The expository organiser provides basic concepts at the highest level of abstraction. At the same time, the comparative organiser is designed to distinguish between old and new concepts in order to prevent confusion due to similarity. Ausubel (1963) stated that meaningful learning occurs when new information is associated with relevant concepts inherent to the student's cognitive structure. A predecessor organiser needs to be explained in terms familiar to students, and in turn, they need to be able to recognise the relationship between the main and sub-concepts. AO is useful, assuming the material to be studied is not properly organised or that the students possess limited abilities (Willerman & Mac Harg, 1991). However, this differs from the main material that focuses on motivating students and acts as a conceptual bridge from original to new knowledge, thereby, making them build a new cognitive structure meaningfully and actively.

There is a significant difference between the average achievement scores of students in the experimental group (Chinelo, Francisca, & Blessing, 2016). AO is also used to help students assimilate new knowledge by providing a scheme in advance. Therefore, it is tethered and assimilated into a new meaning (Hand, 2015). Based on the current vocabulary teaching situation and the advantages of the advance organiser, this paper adopts a literature analysis to explore the various ways to apply advance organisers to vocabulary teaching (Mei, 2018).

Cognitive Style

The independent and dependent cognitive styles are used to examine the differences in understanding concepts between groups of students with FI and FD (Jamaludin, Nawing, & Imran, (2018), and Fudo'il et al. (2019)). However, there are limited studies on the illusion of correctness effect influenced by individual differences in cognition (De keersmaecker et al., 2020). The cognitive style reflects relatively fixed habits, such as when a student receives knowledge, it remembers information and uses it to solve problems (Keefe, 1987).

Kozhevnikov et al. (2014) stated that the verbalisation-visualisation dimension is the most dominant cognitive style usually tapped by individuals to organise, process and convey information (Aggarwal & Woolleyb, 2019). This research showed the techniques used to increase and inhibit cognition, as well as the medium used to organise and distribute it in teams. The empirical findings showed that the relationship between optimism and entrepreneurial persistence is increased at higher levels of cognitive planning and style creation, with negative moderation (Samuel, Albert, Moshfique, & Ofori, 2016). This shows that the analytical cognitive style also acts as a moderator variable (Halim, Hayat, Nawaz, Shahid, & Ayub, 2017).

Cognitive style is influential in the choice of students' learning strategies because its independent and impulsive styles are positively correlated with the strategies presented in this paper. Therefore, they are transformed into the most influential cognitive styles with an impact on students' learning strategy choices (Shi, 2011). People with FI prefer the separation of several patterns, which are analysed based on components (Witkin, Moore, Goodenough, & Cox, 1977). Meanwhile, those with FD analyse patterns as a whole, not separated into parts and depend on outside information to achieve their goals. Therefore, by determining the students' cognitive style, the right learning strategy is chosen to obtain optimal outcomes (Agoestanto, Sukestiyarno, & Rochmad, 2016).

Method

The design of this research is a quasi-non-equivalent control group experiment with a 2x2 factorial. In addition, it consists of the independent, moderate and dependent variables. The sample in this study consists of the 38 students of the Teacher Training Faculty (FTIK) IAIN Samarinda, Indonesia.

Figure 1. Research design

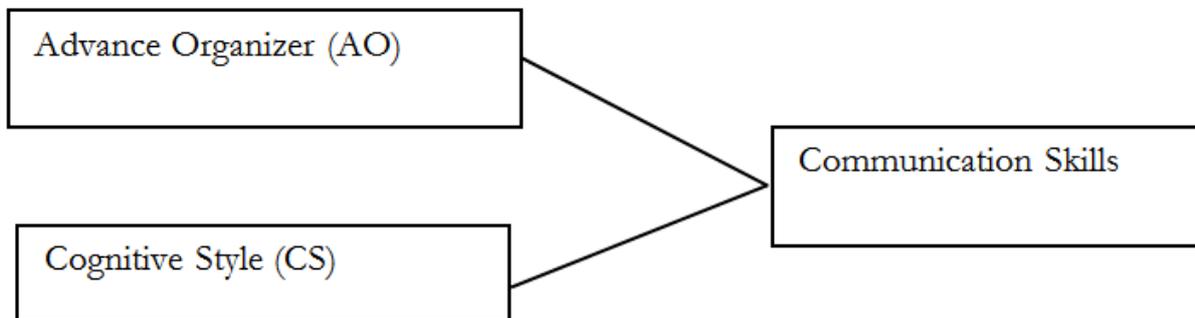


Table 1: Advance Organiser / AO Syntax Stages

Stage 1	AO Presentation	Classifying lesson objectives
		Presenting an organiser,
		Identifying the attributes that explain the strategies used to make the organisation firm.
Stage 2	Present Learning Assignments or material	Creating a logical and explicit sequence of lesson materials. Maintaining an atmosphere for students' attentiveness. Presenting teaching materials in accordance with the learning to be delivered.
Stage 3	Strengthening cognitive settings	Using the principles of integrative reconciliation. Improving learning activities and critical approaches to subject matter.

Data Analysis Techniques

This is a quantitative study, which utilised the ANOVA with the help of the SPSS for Windows 24 program at a significance value of 5% to analyse the data.

Results and Discussion

The study examines the influence of expository and comparative organiser toward learning achievement of curriculum development subjects. This study also aims to determine whether applying AO variations affects the communication skills of higher education students in a variety of different cognitive styles.

Expository and Comparative Organiser

The finding clearly shows that a comparative organiser provides better results than the expository for both students with communication competence and those that learn fast in higher

education. Table 2 shows that the F-ratio for teaching techniques is 10.173 with 1 degree of freedom and a p-value of 0.002 at a significance level of .05 ($\alpha = .05$). Therefore, it can be interpreted that there is a significant difference in the average value for student learning outcomes using the expository and comparative organisers of communication skills achievement in curriculum development subjects. The results of the interaction of AO and CS on communication skills showed a significant interaction with $0.015 < 0.05$, as shown in the following table.

Table 2: Test Effects Between Subjects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	639.707 ^a	5	127.941	4.148	.002
Intercept	479774.898	1	479774.898	15555.626	.000
AO	313.766	1	313.766	10.173	.002
CS	309.196	2	154.598	5.012	.009
AO * CS	34.459	2	117.229	2.559	.015
Error	2158.977	70	30.843		
Total	487600.000	76			
Corrected Total	2798.684	75			

a. R Squared = 0.229 (Adjusted R Squared = .173)

Therefore, there is a significantly different influence on communication skills with the implementation of the advance organiser. From the estimated marginal average analysis in Table 3, the ranking of the two groups is determined. The highest average score is seen in the group of students taught expository and comparative organiser.

Table 3: Estimated Marginal Means of Advance Organiser

AO	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
expository organiser	78.083	.909	76.271	79.896
comparative organiser	82.182	.909	80.370	83.994

Field Dependent and Field-Independent Cognitive Style

Table 4 shows that the average learning achievement of students with FI and N cognitive styles were 77,500 and 80,625, respectively. The average for the FD cognitive style student group is 82,273. Therefore, the best performance is achieved by the FD, followed by the neutral and FI.

Cognitive style is an individual characteristic to consistently think, remember, solve problems, make decisions, organise and process information, etc. Another way in which people belong to

FD is by paying more attention to external social references in defining their attitudes and feelings (Witkin et al., 1977).

Table 4: Estimated Marginal Means of Cognitive Style (CS)

CS	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Field Independent	77.500	1.014	75.478	79.522
Neutral	80.625	1.134	78.364	82.886
Field Dependent	82.273	1.184	79.911	84.634

The findings in this study showed that FD achieves the greatest advantage in students with specific reference to the nature of their organisation (Satterly & Telfer, 1979). However, AO tends to provide a structure for student thinking and acts as a conceptual bridge from old to new information (Kigo, Okere, & Maghanga, 2018). Structuring a lesson material requires a model capable of organising and delivering the subject in an attractive way for students to learn and develop their cognitive skills, thereby achieving the desired teaching objectives. In other words, the teacher makes it easy for students to learn through the most fitting models.

Ausubel stated that AO helps students to understand new knowledge and make them familiar with the subject by forming a framework obtained through "advanced regulator." When presenting an Advance Organiser, their thought patterns are strengthened to think and connect with prior knowledge. Therefore, it is possible to improve students' metacognitive skills into an integrated system to help boost their performance (Bency & Nagarajan, 2012).

Previous studies showed that students' mathematical thinking abilities with FI are better than FD on inference, assumption, deduction and interpretation. Meanwhile, in the aspect of evaluating arguments, FD is less than FI (Agoestanto et al., 2016). The AO in mathematics textbooks used in secondary schools (Şen, 2018) has a positive effect on improving student learning outcomes, and this is in line with the previously described theory (Hasbiyalloh, Harjono, & Verawati, 2017). It is also an effort to compare the achievements of two groups of economic students taught through the AOM and others the conventional methods. It was found that the group of students that studied economics through the AOM-Advance Organiser Model had a significantly higher score on the test achievement criteria (Ranju, 2015).

According to Ausubel, using AO is essential for teachers to achieve the following: (1) provide brief information on the topic to be presented. (2) Associate old information with something newly taught, which helps students recognise the topic. Therefore, the result showed that the AO model encourages learning achievement, with an average value of 82.182. It is used to determine the usefulness of new material (Joyce et al., 2015).



According to Joyce (2015), there are several ways to facilitate the reconciliation of new material with existing cognitive structures such as (1) by reminding students of ideas, (2) summarising the main attributes of new learning material, (3) repeating the exact definition, (4) asking for differences between aspects of the material and (5) asking students to explain how learning material supports the concept or the proposition used as an organiser. However, further studies need to be conducted for teachers to pay more attention to the conducive environment around the school to support the learning process and motivate students' confidence in answering questions (Sapta, 2017). Therefore, AO is used to increase learning outcomes to achieve high cognitive goals (Nadira & Ramdhan, 2018).

Conclusion

In conclusion, subjects treated with comparative organisers achieve better communication skills than expository organisers, with an FD cognitive style of 82.273. Therefore, the best performance is achieved by the FD, followed by the neutral and the FI group. Therefore, with the subjects with Field Dependent (FD), cognitive style showed greater achievement on communication skills compared to FI. There is also a significant interaction between various types of advance organiser models and different cognitive styles toward students' communication skills.

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