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The relationship between digital literacy and heutagogy learning: a pilot study among college students in Indonesia

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Received 29 June 2022
Revised 24 February 2023
Accepted 6 March 2023

Abstract

Purpose – This study aims to describe digital literacy (DL) and heutagogy and examine the relationship between the two.

Design/methodology/approach – This study employed a quantitative approach using a survey method. The respondents were students at a college in Indonesia. The respondents were students at a college in Indonesia. Data were collected using a questionnaire distributed to students via a Google form. Furthermore, the data were processed using Statistical Package for the Social Sciences (SPSS).

Findings – From a demographic profile, the study describes that students choose Google to search for information rather than to the library, the most used gadget is a smartphone, the average access to information is 2–7 h per day and the purpose of information access is to do assignments. The results of the statistical tests show there is a relationship between heutagogy learning and DL.

Research limitations/implications – This study will help policymakers to develop DL in a vocational school.

Originality/value – This research will contribute to the improvement and implementation of heutagogy learning emphasis on a DL case study in Indonesia. This research can assist policymakers in preparing DL skills in heutagogy learning in vocational school. This research will add new literature, methodology and framework on heutagogy learning and DL to library and information management field.

Keywords Heutagogy learning, Digital literacy, College student, Developing countries

Paper type Research paper

Introduction

Technology is evolving rapidly in this century, causing rapid changes in many areas of life, including education. To keep up with the benefits of globalization, education is undergoing a revolutionary shift (Blaschke *et al.*, 2014). Learning in this century is designed so that students can keep up with the latest technological developments. Learning integrates literacy ability, knowledge capacity, skills, attitudes and mastery of technology (Dewantara, 2021).

Heutagogy is a type of learning that focuses on the self-determined learning that is currently being developed (Halsall *et al.*, 2016a). Heutagogy requires students to become more

The authors would like to thank everyone who participated in the survey and contributed their ideas and thoughts to this research, especially students who volunteered their time to answer the questionnaire. The authors thank the Faculty of Vocational Studies, Universitas Airlangga, Surabaya, Jawa Timur, Indonesia and the Faculty of Information Management, Universiti Teknologi MARA, Malaysia.

Funding Statement: The study was supported by the Indonesian Ministry of Education (2021 DRPM Grant), and the authors like to thank the Universitas Airlangga for the generous support.

Library Management
© Emerald Publishing Limited
0143-5124
DOI 10.1108/LM-06-2022-0062

self-directed learners, with the teacher serving only as a mentor and free students to plan their own learning experiences (Shuhidan, 2013). Furthermore (Blaschke *et al.*, 2014), stated that heutagogy aligns with student's needs in the twenty-first century, particularly in developing individual abilities. Heutagogy is relevant today because it allows students to choose what to learn and how to learn it freely. The heutagogical approach is still new and not all schools in Indonesia have implemented it. Previous studies have argued that heutagogy encourages learners to reflect on unstructured everyday learning experiences (Blaschke *et al.*, 2014). In addition, the heutagogy method gives students and teachers the opportunity and freedom to select, use and obtain information about school problems from various sources (Blaschke and Hase, 2016; Halsall *et al.*, 2016a). Heutagogy is a valuable strategy for empowering students to become self-directed in their learning, particularly in higher education (Akyildiz, 2019). The findings of the case studies show that there are challenges in incorporating heutagogy (e.g. difficulties for students in adopting the approach), but once adopted, students prefer to learn in a self-determined manner. Blaschke, 2021). Sulistya (2019) revealed that developing a comprehensive and dependable learning management system platform is critical for the heutagogy learning approach. Digital literacy (DL) is an important tool for survival in highly competitive times (Bansal, 2015).

The results of research conducted by Rahmadi and Hayati (2020) show that (1) as almost all information used as a source of learning and the learning process in universities has been widely carried out in a digital environment, DL for academic purposes is very much needed; (2) the development of MOOCs opens up vast opportunities to be used as an open and massive learning platform to increase the DL of millennial college students; and (3) the learning capacity of 21st-century millennial college students remains. Cahyani *et al.* (2020) states that the learning climate created by online learning also affects college students' learning motivation. Online learning is a program that organizes classes to reach a large and diverse audience. The network allows massive learning to occur with unlimited participants (Yusuf and dan Nur, 2015, p. 01).

Vocational education explicitly prepares students to enter the work world. The current conditions in the world of work are full of changes, so vocational education graduates must be able to develop themselves in a changing workplace (Slamet, 2005). Vocational education emphasizes students have the skills they obtain from learning by practice. Online learning for vocational education is not very effective, but students need to obtain DL materials because of this situation.

Based on the background, this study aims to examine the relationship between heutagogy learning, including learner agency, capability, reflection and non-linear design and DL among college students in Indonesia.

Literature review

Research on the relationship between DL and heutagogy learning has not been done much. DL skills are important to emphasize because of increasingly advanced technology. In addition, Shuhidan *et al.* (2021) adds that today's core challenges in schools and colleges are determined not only by which skills and knowledge should be taught and learned in the curriculum, but also by appropriate learning approaches that are sensitive to situations or conditions in shaping reliable future generations to achieve excellence, sustainability and global competitiveness.

Heutagogy learning

"Heut" derived from ancient Greek, indicates the self and is a very novel learning theory at the beginning developed out of the vocational area in Australia. It is well set up in higher

educational institutions such as Europe, North America and Australia. Still, it is a relatively new term in Indonesia. The self-determined learning theory or heutagogy was defined and described by Chris Kenyon and Stewart Hase in their first article on heutagogy in 2000 (Hase and Kenyon, 2000). Heutagogy takes a holistic approach to develop learners' abilities, viewing learning as an active and proactive process and students as "primary agents in their learning, which occurs as a result of personal experience." (Blaschke *et al.*, 2014). Furthermore, he also facilitates the learning process by providing guidance and resources. Still, it is entirely the choice of ownership of learning pathways and processes for the learner, who negotiates to learn and determines what will be learned and how it will be learned (Hase and Kenyon, 2000).

According to (Hase and Kenyon, 2000, as cited in Narayan *et al.*, 2019) heutagogy could be seen as a progression of pedagogy and andragogy, where the learner has the autonomy to determine and direct their learning path and process. In addition, heutagogy is a new pedagogical approach that emphasizes the individual's need to learn independently and regards the ability to do so as a basic skill for living in the fastly changing world. It assumes that people, young and old, learn from a full range of life experiences and that educators have to guide the development of ideas rather than force-feeding the wisdom of others. Heutagogy acknowledges that knowledge and skills assume distinct forms in the postmodern era and do not necessarily lead to meaningful learning. The teacher and student must recognize the knowledge, skills and processes necessary for meaningful learning. Heutagogy anticipates a future in which knowing how to learn will be an essential educational skill (Ashton and Newman, 2006).

Nevertheless, it emphasizes collaborative learning and is suitable for the postmodern era. In addition to leading the learning process, learners are partners in shaping the processes of evaluation, including self-evaluation. According to this approach, the excellent teacher is a moderator of learning who guides learners via a dialog that relates to their personal learning needs and holds practical applicability to their own lives (Hase and Kenyon, 2007). Finally, Heutagogy is built around the following key principles learner agency, capability, reflection and non-linear design.

Learner agency is the ability of humans to make their own choices in life is a central principle of heutagogy, where the learner is the agent or driver of their learning. Within a heutagogic learning environment, learners are given complete responsibility for the learning process and determine what they will learn and how they will learn and ultimately assess the success of their learning (Hase and Kenyon, 2000, 2007, 2013; Hase, 2009; cited in Blaschke, 2016). One of the major goals of heutagogy is to create capable learners who are well-equipped for the demands of complex and changing work environments. While andragogy focuses on developing skills and competencies, heutagogy takes student learning a step further by focusing on building and expanding upon competencies and giving students ownership of learning. This active involvement and ownership of the learning path and process increase learner self-motivation, eventually leading to capability development. Capability emerges from a sense of self-efficacy, where learners feel confident in coping with and performing in new and unfamiliar situations and contexts. Another important characteristic of heutagogy is double-loop learning, where learners confront their values and beliefs and adapt them accordingly, basing their decisions on the information available. Double-loop learning also involves **self-reflection** on the individual learning process: reflection on what has been learned and how it has been learned. In reflecting on how individual learning occurs, 'the learner connects the knowledge or skill to previous experience, integrates it entirely in terms of value and can actively use it in meaningful and even novel ways' (Hase, 2011, pp. 2–3). Heutagogy is further defined by its non-linear design and learning approach, an attribute that aligns seamlessly with the non-linear design of the web, which is characterized by a construct of hypertext topics and hyperlinks.

Digital literacy

Gilster (1997) defined DL as a person's ability to use information in various forms. Meanwhile, the United Nations Educational, Scientific and Cultural Organization (UNESCO) stated that DL is "the ability to use information and communication technology (ICT) to find, evaluate, utilize, create and communicate content or information, with cognitive, ethical, social-emotional and technical skills or technology skills". According to (Janssen *et al.*, 2013), DL is the ability to find, evaluate and use digital information effectively, efficiently and ethically. According to (Lemke, 2002), literacy in the digital age consists of several components ranging from fundamental scientific literacy to economic literacy, technological literacy, visual literacy, information literacy, multicultural literacy and global awareness. DL encompasses more than ICT literacy and includes elements such as information literacy, media literacy and visual literacy. There is broad agreement on the need to shift the emphasis from mere technical mastery to identifying higher-order cognitive skills and socio-ethical-relational problems associated with technology use (Calvani *et al.*, 2008). By using various types of DL, students can improve their learning process and "survive" various obstacles in learning (Eshet-Alkalai, 2004).

The prior study defines DL as the utilization of digital devices to establish meaning and communicate efficiently with some accessories such as digital texts, navigate non-linear digital documents and evaluate digital information (Bulger *et al.*, 2014; Eshet-Alkalai, 2004; Ng, 2012). In addition, (Fraillon *et al.*, 2014) defines DL as utilizing computers' accessible and productive devices to collect, build, transform and securely use information. Moreover, DL is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process (Martin and Grudziecki, 2006). Thus, DL can be concluded as the use of digital devices to process, create, transform, communicate and make safe use of information.

Digital literacy education in heutagogy learning

Students must possess adequate literacy skills to be educated in the digital age. Indonesia has a lower literacy rate than other countries. As a result, DL as part of 21st-century education becomes important as early as elementary school. Previous research has found that implementing DL requires collaboration from various parties, including the government, schools, parents and the community (Dianimdri and Yuliani, 2018). Data analysis revealed a significant relationship between DL and self-directed learning among students at the University of North Sumatra's Faculty of Psychology (Akbar and Anggaraeni (2017).

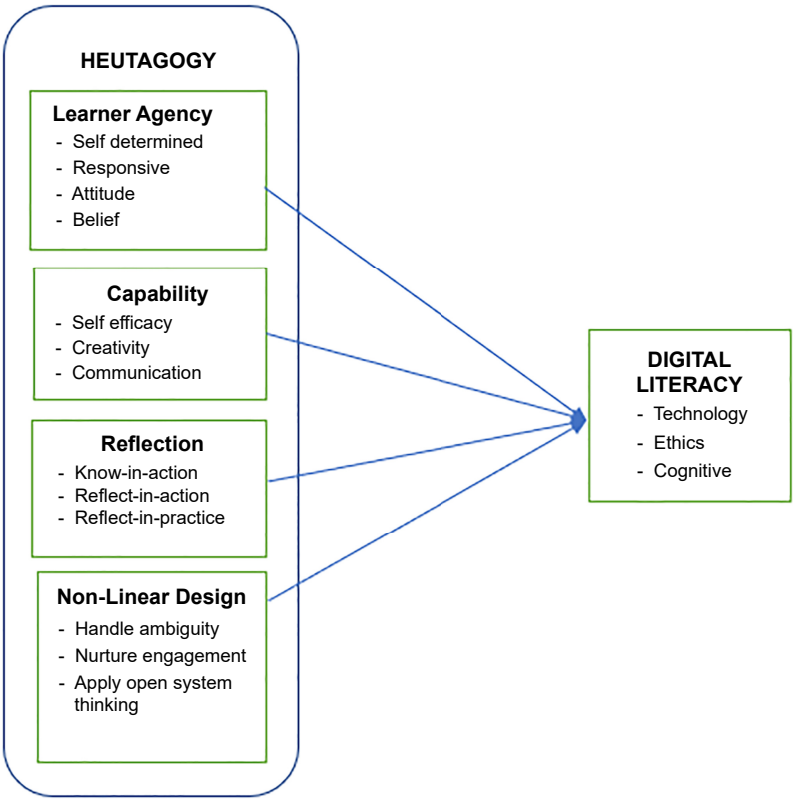
Latifah's (2018) research results show that students realize they have implemented independent learning (self-directed learning (SDL)) in their daily lives. Coupled with their DL ability, the separate learning process further adds to learning outcomes. In this study, framework research is shown in Figure 1.

Based on the developed theoretical framework, hypotheses of this study can be divided into four (4) main ideas (see Table 1).

Table 1. Hypothesis

	Hypothesis
H1	Learner agency has a relationship with digital literacy
H2	Capability has a relationship with digital literacy
H3	Self-reflection has a relationship with digital literacy
H4	Non-linear learning design has a relationship with digital literacy

Source(s): Table by authors



Source(s): Figure by authors

Figure 1.
Research framework

Research methods

This study used a quantitative research approach to investigate the relationship between heutagogy learning and DL among college students in Indonesia. This study was conducted at the Faculty of Vocational Studies. The research population was active Faculty of Vocational Studies, Airlangga University students. Based on the Slovin formula, the sample size was 100 students. The data collection technique used in this study was the Google Form survey. The measurements used for DL and heutagogy use a Likert scale of to1-5, where one indicates *strongly disagree and* five means *strongly agree*.

Random sampling was used in 21 study programs at the Faculty of Vocational Studies, Airlangga University. The number of samples in this study was determined using the Slovin formula, with an error tolerance limit of 10%.

Data was collected using a questionnaire distributed to students via Google (online), because during the pandemic, all students carried out online lecture activities. Online data collection saves time (Riva *et al.*, 2003). The data obtained were processed using SPSS software version 26. Before the data were analyzed, testing their validity and reliability was necessary.

Result

Respondents' information access behaviour is depicted in Table 2. The media most frequently accessed by respondents is the Google search engine, at 40.9%. The rapid development of the

internet allows a person to quickly obtain references, which is sufficient to look up on search engines. Google is still "The King of Search Engines" in the world. Google is cyberspace's most popular search engine for obtaining the desired information. It can be searching website addresses, images and files or finding topic sites. The library only ranks 4th and bookstores the least favorable choice. The library also has the advantage of being accurate in providing information (Hidayat, 2015).

The device most often used by students is a handphone. The increasing ability of cell phones or smartphones has positioned them as the technology of choice, replacing PCs for many users, especially students. These devices should be considered learning tools that are inevitably available for higher education. Research has shown a digital divide between teachers and students regarding the knowledge and use of smartphones in university settings (Yu and Conway, 2012). 21st-century learners rely on technology to engage them in education. Applying technology connects them to unlimited resources, which increases the value of education (Buck *et al.*, 2013). The average number of students in the Vocational Faculty of Airlangga University accessing information within one day was 2–7 h. They believed the duration was sufficient to meet their information needs within one day.

The purpose of students in accessing information in their daily lives is most often to do assignments 45.2%. The data above shows that most Vocational Faculty of Airlangga University students access information for completing assignments and independent study. It is because, during this pandemic period, the teaching and learning activities process in universities has become an e-learning system. It requires every student to do assignments from each given meeting and study independently to understand the material or grid that has been taught in more detail. According to data from the Indonesian Ministry of

Media accessed		%
Valid	Blog	15.2
	Instagram	0.4
	Journal	0.8
	Newspaper	0.4
	Library	8.9
	Search engine/Google	40.9
	Book Store	2.1
	Website	30.8
	Youtube	0.4
Information access devices		
Valid	Handphone	53.6
	PC/Laptop	43.1
	Tablet	3.3
Intensity access to information		
Valid	2–7 h	63.4
	8–13 h	18.8
	Less than 2 h	15.8
	More than 14 h	2.0
Information access purposes		
Valid	Independent study	33.8
	Personal needs	1.0
	Doing tasks	45.2
	Research	20

Table 2. Respondents' information access behavior

Source(s): Table by authors

Communication and Information survey, children and adolescents access the internet for three main reasons: seeking information, connecting with old and new friends and entertainment. Schoolwork often drives information seeking, whereas personal needs drive the use of social media and entertainment content. (https://kominfo.go.id/content/detail/3834/siaran-pers-no-17pihkominfo22014-tentang-riset-kominfo-dan-unicef-mengenai-perilaku-anak-dan-remaja-dalam-menggunakan-Internet/0/siaran_pers).

Reliability and validity test results

The validity and reliability test were used to determine the extent to which the accuracy of a research measuring instrument and the extent to which the results were reliable. The test assessment criterion is if Cronbach's alpha is > 0.6, then an instrument is faithful and the value of the corrected item is greater than the table of this study, which equals 0.1638.

The results of this study's validity and reliability test using SPSS 25 showed that all questions and statements tested in the questionnaire proved valid and reliable because Cronbach's alpha values were all greater than 0.6 and all the corrected item values were greater than 0.1638.

Classical assumption test results

Normality test results. This test determines whether the independent and dependent variables are normal because a good regression model has a normal or close-to-normal distribution. To ensure the distribution of the data, it was necessary to test the normality of the data. Scale-type data generally follows the assumption of a normal distribution. The graph below shows the P-P plot test results in this study.

Based on the above graph (Figure 2), the data distribution is central and close to the diagonal line. Therefore, it can be said that the data in this study had a normal or normally distributed spread.

Multicollinearity test results. The result of this test ensured the presence or absence of a robust linear relationship between the independent variables in the multiple linear regression model. If the results show a variance inflation factor (VIF) value < 10, there is no multicollinearity assumption. The Table 3 shows the multicollinearity test results for this study.

Based on the table above prepared from SPSS, it is known that all VIF values of all independent variables in this study have a value of less than 10. It can be said that all independent variables in this study are spared from the classical assumption of multicollinearity.

Heteroscedasticity Test Results. These test results are in the form of scatterplots to show the spread of data points, which can be expressed as follows (Figure 3).

The scatterplot image shows that the data points spread up and down from 0. The data points did not appear to be collected at one end and did not form patterns. Therefore, it can be concluded that it is free from the classical assumption of heteroscedasticity and is worthy of use in research.

Multiple linear regression test results. This study consists of four independent variables learner agency (X1), capability (X2), reflection (X3) and non-linear design (X4). The results of the multiple linear regression test can be seen from Table 4.

Based on the Table 5, it is inferred that:

(1) A constant of 46,893 means that without independent variables, namely Learner Agency (X1), Capability (X2), Reflection (X3) and Non-linear Design (X4), the value of interest variables in DL is 46,893.

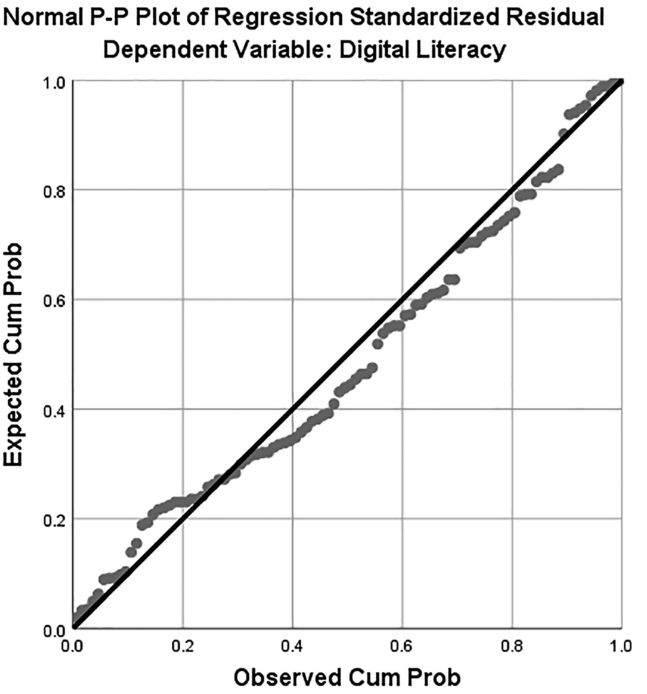


Figure 2.
Normality test result

Source(s): Figure by statistical test result

Independent variables	VIF
Learner Agency	3.367
Capability	3.191
Reflection	3.578
Non-linear Design	4.192

Table 3.
Multicollinearity test results

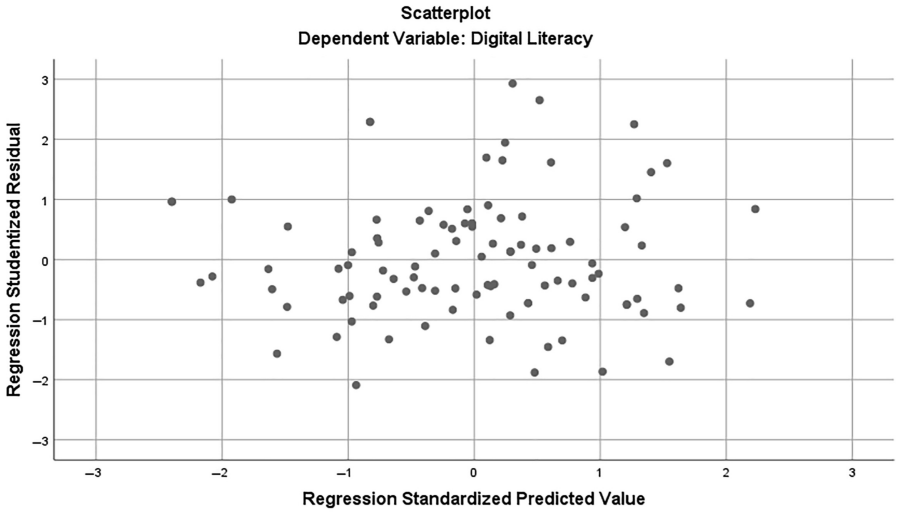
Source(s): Table by authors

(2) The regression coefficient value of the learner agency variable (X1) is 0.215, meaning that if X1 changes 1-unit, then Y will change by 0.215 with the assumption that other variables remain.

(3) The regression coefficient value of the Capability variable (X2) is 0.382, meaning that if X2 changes 1-unit, then Y will change by 0.382 with the assumption that other variables remain.

(4) The regression coefficient value of the reflection variable (X3) is 1.824, meaning that if X3 changes 1-unit, then Y will change by 1.824, assuming that other variables remain.

(5) The regression coefficient value of the non-linear design variable (X4) is 0.381, meaning that if X4 changes by 1-unit, then Y will change by 0.381 with the assumption that other variables remain.



Source(s): Figure from statistical test result

Figure 3.
Heteroscedasticity test results

Coefficients

Model		Unstandardized coefficients B	Unstandardized coefficients Std. Error	Standardized coefficients Beta	t	Sig
1	(Constant)	46.893	15.919		2.946	0.004
	Learner Agency	0.215	0.502	0.058	0.428	0.669
	Capability	0.382	0.484	0.104	0.790	0.431
	Reflection	1.824	0.553	0.461	3.297	0.001
	Non-linear Design	0.381	0.501	0.115	0.762	0.448

Note(s): a. Dependent Variable: Digital Literacy
Source(s): Table by authors

Table 4.
Results of multiple linear regression test coefficients

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.693[a]	0.480	0.458	16.731

Note(s): a. Predictors: (Constant), Non-linear Design, Capability, Learner Agency and Reflection
Source(s): Table by authors

Table 5.
Determination test results

(6) The R value of 0.693 shows that the relationship of the DL variable with learner agency, capability, reflection and non-linear design is strong.

(7) The value of R square is 4.80, indicating that the relationship of heutagogy on a person's DL is 4.80% and the rest is 6.20% influenced by other variables outside the research model.

t-Test. A *t*-test was performed to see the partial relationship between independent variables (learner agency, capability, reflection and non-linear) and the dependent variable (DL). The results of the t-test performed in this study can be seen from Table 6.

F-test. The F test was conducted to determine the effect of all independent variables (learner agency, capability, reflection and non-linear design) simultaneously with the dependent variable (DL). Table 7 shows the F-test results:

Based on the Table 7, it is known that the f-statistics 21.920 is greater than F table 2.00, with a significance level of 0.1. Thus, H0 is rejected, whereas H1 is accepted. The independent variable (X) significantly affects the dependent variable (Y). It can be concluded that the variables of learner agency, capability, reflection and non-linear design have an effect and can be used to predict DL. In other words, heutagogy has a relationship with DL.

From the results of the validity and reliability test of this study using SPSS 25, it was found that all the questions and statements tested in the questionnaire were proven valid and reliable because Cronbach's alpha values were all greater than 0.6 and all corrected items values were larger than 0.1638.

Based on the graph above, the distribution of the data is centered and approaches the diagonal line, so it can be said that the data in this study are normally distributed. Based on the above table, which was processed using SPSS, it is known that all VIF values of all independent variables in this study are less than 10. It can be said that all independent variables in this study averted the classical assumption of multicollinearity.

In this study, there were four independent variables: learner agency (X1), capability (X2), reflection (X3) and non-linear design (X4). Based on the above table, this can be explained as follows.

(1) The constant is 46,893, which means that without the independent variables, namely Learner Agency (X1), Capability (X2), Reflection (X3) and Non-Linear Design (X4), the value of the dependent variable, which is DL, is 46,893.

(2) The regression coefficient value of the learner agency (X1) variable is 0.215, which means that if X1 changes 1-unit, Y will change by 0.215, assuming other variables remain.

Variable	*t*-statistic	t-table	Significance level	Hypothesis
Learner Agency (X1) → Digital Literacy	7,063	1,290,075	0.1	Accepted
Capability (X2) → Digital Literacy	7,149	1,290,075	0.1	Accepted
Reflection (X3) → Digital Literacy	9,153	1,290,075	0.1	Accepted
Non-linear Design (X4) → Digital Literacy	7,867	1,290,075	0.1	Accepted

Source(s): Table by authors

Table 6. *T*-test results

ANOVA[a] Model		Sum of squares	df	Mean square	F	Sig
1	Regression	24,543.541	4	6135.885	21.920	0.000[b]
	Residual	26,593.049	95	279.927		
	Total	51,136.590	99			

Note(s): a. Dependent variable: digital literacy
b. Predictors: (constant), non-linear design, capability, learner agency and reflection
Source(s): Table by authors

Table 7. F-test results

(3) The regression coefficient value of the Capability (X2) variable is 0.382, which means that if X2 changes by 1-unit, Y will change by 0.382, assuming other variables remain.

(4) The regression coefficient value of the reflection variable (X3) is 1.824, which means that if X3 changes by 1-unit, Y will change by 1.824, assuming that other variables remain.

(5) The regression coefficient value of the non-linear design (X4) variable is 0.381, which means that if X4 changes by 1-unit, Y will change by 0.381, assuming other variables remain.

(6) An R-value of 0.693 indicates that there is a strong relationship between the DL variable and learner agency, capability, reflection and non-linear design variables.

(7) The value of R square is 4.80, indicating that the influence of heutagogy on one's DL is 4.80% and the remaining 6.20% is influenced by other variables outside the research model.

Discussion

The heutagogy variable has four dimensions: learner agency, capability, reflection and non-linear design. The heutagogy variable was measured using 54 statements. A defined learning approach is the best place to engage in contemporary learning and teaching experiences in the competitive higher education market (Halsall *et al.*, 2016a, b). In addition, heutagogy as self-determined learning provides them a revolutionary frame of mind about learning (Blaschke and Hase, 2016). The case study results reveal challenges in incorporating heutagogy (e.g., difficulties for students in adopting the approach), but once adopted, students prefer to learn self-determinedly (Blaschke, 2021).

The DL variable was measured using 48 statements. From all the statements that were asked and processed, the results showed that there were 11 statements with very high categories, which were the ability to use a web browser well; understand the features in the web browser when accessing information; use search engines (Google, yahoo, bing and ask) when searching for information on the internet, able to understand how search engines work, download many social media applications (Line, Instagram, Twitter, Telegram, WhatsApp) on the gadget; understand the terms and conditions that apply to each social media before creating an account; register and fill in your identity in a full profile on social media; check the correctness of the information before sharing it; have sufficient Internet quota to access information; able to distinguish true and false information (hoax and credible) by examining the source of the information; sorting information into folders for easy searching. Previous research showed that findings from previous studies revealed students' digital exposure was not a driving factor in developing technological competence but was found to be a more encouraging factor (Rafi *et al.*, 2022).

H1. learner agency has a relationship with DL.

A partial test of the Learner Agency variable (X1) on DL (Y) shows that t-statistics 7.063 > 1.290075 t-table with a significance level of 0.1. These results indicate that H1 is accepted. In other words, the learner agency variable is partially related to the DL variable.

The Learner agency dimension shows two questions have a very high category, namely statements about the ability to use learning media and perform every task the lecturer gives. On the other hand, there are statements that only respond neutrally regarding the ability to use libraries to improve the understanding of learning materials. Students of Universitas Airlangga's Faculty of Vocational Studies have excellent skills in determining what media they will use to access information. In addition, they always performed every task given by

the lecturer. However, there was a finding that related students responded neutrally when asked whether they used the library to improve their understanding of the learning materials. As for demographic data, it is known that the library is only the fourth media chosen by students and is still inferior to search engines. In other words, libraries are not the primary medium. Human agency, the ability of humans to make their own choices in life, is a central principle of heutagogy in which the learner is the agent or driver of learning. In a heutagogical learning environment, students are given full responsibility for the learning process and determine what they will learn and how they will learn and ultimately assess the success of their learning (Blaschke, 2021).

H2. capability has a relationship with DL

A partial test of the Capability variable (X2) on DL (Y) shows a t-statistic of 7,149 > 1,290,075 t-table with a significance level of 0.1. These results indicate that H0 is rejected; in other words, the capability variable partially influences the DL variable.

From all the statements on the capability dimension, it appears that three statements get a very high category, namely statements of students' beliefs in realizing their goals, differences of opinion in learning and a desire to share information with friends. The teacher has a role as a facilitator and guide for students to use a very wide range of resources (both online and traditional) to solve problems and gain personal understanding and capacity. Heutagogical emphasis on self-direction and capacity focuses on developing efficacy in utilizing tools and information resources available on the internet (Dron and Anderson, 2014).

H3. reflection has a relationship with DL

A partial test of the reflection variable (X3) on DL (Y) shows that t-statistics 9,153 > 1,290,075 t-table with a significance level of 0.1. These results show that H0 is rejected; in other words, the reflection variable is partially related to the DL variable.

Reflection entails the learner reflecting not only on what they have learned but also on how they have learned it-and understanding how they have learned it (Blaschke, 2016). In the reflection dimension, there are two statements that students respond to and have a very high category: the material presented by the lecturer is used to make decisions regarding learning materials and students learn according to their abilities. Based on this, the students of the Vocational Faculty of Universitas Airlangga have reflected on what they have learned in their decision-making about what they will study more deeply. And they can also reflect on themselves about the extent to which they have known, which is adjusted to the capacity of their ability to understand a learning material.

H4. Non-linear design has a relationship with DL

A partial test of the Non-Linier Design variable (X4) on DL (Y) shows a t-statistic of 7,867 > 1,290,075 t-table with a significance level of 0.1. These results show that H0 is rejected; in other words, the non-linear design variable partially influences the DL variable.

Another dimension of heutagogy is non-linear design (NL). The learner oversees learning and defines the learning path in this study; because each learner's experiences and model differ, the path taken can be divergent and predictable. Learning occurs in a non-linear format because of learners choose their path (Blaschke, 2016). Measurements on the dimensions of non-linear design through 13 statements. From all the statements that were asked and processed, the results are known that two statements get a very high category. The statement is that students want to get new learning experiences; students can accept criticism from others to improve their learning abilities. It can be said that students of the Faculty of Vocational Studies, Universitas Airlangga, are open to new experiences and willing to accept new experiences from their learning outcomes. They are also open to receiving criticism from

others about them and their learning process, so they realize that this criticism can improve their ability to learn.

Conclusion and implications

The heutagogy variable has four dimensions: learner agency, capability, reflection and non-linear design has relation to DL, which has three dimensions: technology, ethics and cognition. All the heutagogy dimensions will influence the student's DL. The influence test results revealed that the dimensions of learner agency, capability, reflection and non-linearity influence and can be used to predict DL. In other words, heutagogy affects DL. This research should help policymakers prepare DL skills in heutagogy learning in vocational universities and add new literature, methodologies and frameworks on heutagogy learning and DL.

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