

# THE IMPACT OF COGNITIVE SKILL, AND INDIVIDUAL INNOVATIVENESS ON DIGITAL FORMAL LEARNING MEDIATED BY ATTITUDE TO USE INTERACTIVE WORKSHEET DIGITAL

Dessy Seri Wahyuni<sup>1</sup>, Gede Ariadi<sup>2</sup>

<sup>1</sup> Department of Informatics and Engineering Education, Universitas Pendidikan Ganesha  
<sup>2</sup> Department of Management, Universitas Kristen Satya Wacana, Indonesia

email: seri.wahyuni@undiksha.ac.id<sup>1</sup>, ariadi.ratih@gmail.com<sup>2</sup>

## Abstrak

*This research explores the essence of cognitive skill and individual innovativeness in junior high school students in Bali Province, influencing digital formal learning across a mediator variable. This study proposes to provide the comprehension of digital technology used by students that focus on attitude to use interactive worksheet digital as a mediator for supporting digital formal learning. The study analyzes sampling data from 167 students in the junior high school in Buleleng Regency by partial least square-path modeling. The findings reveal that cognitive skill and individual innovativeness in digital formal learning are partially mediated by attitude to digitally using interactive worksheets. The finding discovers students' attitudes toward using digital tools that enhance their output, such as accomplishing tasks more effectively and delivering satisfying learning.*

**Keyword :** *Cognitive skill; individual innovativeness; attitude to use worksheet digital; digital formal learning.*

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## PENDAHULUAN

Involvement in digital technology has grown into an essential element of students' everyday lives. This inclination proposes a transformation mode of attempting to study and absorb knowledge, not in school but in outdoor school. Conversely, digital technology is not utilized in learning systems. In junior high school, pupils now suppose more tailored, shared, and well-controlled official learning [1]. Prior learning studies have been concerned with achieving the learning process using conventional modules (paper-based) [2].

The latest empirical research focuses more on digital formal learning in junior high school as it is a recent inclination of ubiquitous studying amid junior high school students in the digital phase [3]. These incline to emphasis on the application of worksheets digital in the learning process [4]. Digital formal learning attributes a digital instrument such as a worksheet improved atmosphere that learners can expand their studying experiences with

digital technology [5]. Conversely, the practical study is required to enhance the perception of character and the level of digital formal learning, mainly accomplishing assignments using worksheets digital [3].

Additionally, young individuals utilize digital capability, which links to significant cognitive developments of digital formal learning in official circumstances. Even though there are several structures and discussions about cognitive skills, such overall theoretical backgrounds will not be adequate as the digital capability expands [6]. Thus, we oblige more improved evaluation instruments to assess cognitive skills that must be expanded. Furthermore, previous studies state that digital capability can influence students' performance with technological competence in formal learning atmospheres such as visual literacy and understanding technical concepts [5], [7]. Thus, it is vital to recognize the part of cognitive skills in learners' digital formal learning.

The existence of formal studying by digital technology is students positioned in individual studying circumstances. Hence the main individual aspects must be examined [4]. Findings have revealed which learner's attributes significantly impact flexible ways for formal studying in junior high education, specifically individual innovativeness [8]. Attitude to technology, such as digital worksheets, has substantially influenced school students' studying by technology [9]. As the main bridge to formal studying with technology, attitude mediates the influence of individual innovativeness and cognitive skill on students' formal studying behavior. It defines which cognitive skills and individual innovativeness can directly affect digital formal learning alongside indirectly affecting learners' formal learning conduct with technology within attitude [10].

Generally, rare studies have stated the concept of relations amid individual aspects from a student viewpoint and how these aspects perform concurrently in digital formal learning. This research shows how cognitive skills interrelate with individual innovativeness and attitude to use worksheets digital to support digital formal learning activities. The study approach tries to explain the attitude to using worksheet digital that influences formal digital learning, which is individual circumstance-centered and autonomous studying. Then, this research examines the relations and impacts of cognitive skills, individual innovativeness, and attitudes to the use of technology learning on digital formal learning conducts amongst school pupils.

### **THEORETICAL CONCEPT**

Cognitive Skill is learners' capability to utilize knowledge technology to use and retrieve information. Cognitive Skill involves how students apply technology to organize structured data and connect textual and visual data for advanced making and interaction of information with digital instruments. It is personally linked to the learner's computer or Information communication technology (ICT) that highlights users' perception of their competencies to utilize ICT to accomplish proposed results [11]. Prior research stated that ICT self-effectiveness substantially impacts students' implementation of the digital instrument such as interactive worksheets digital (IWS) for studying [11], [12]. Furthermore, empirical research revealed which ICT self-effectiveness is significantly linked to studying by digital media [13]. Then, we substitute ICT

comprehended self-effectiveness with cognitive Skills and hypothesize; H1: Cognitive skill is positive linked with students' digital formal learning.

While studying digital technology in formal circumstances is a formal learning practice that highlights student control. Prior studies define that in formal learning, where students arrange their aims, inherent enthusiasm is more significant than in formal situations where aims are pre-established [14]. Thus, formal learning by digital knowledge relies on personal eagerness to utilize as many as the other external aspects linked to digital technology. Outcomes by information system literature reveal that individual innovativeness is a vital characteristic influencing intention to apply ICT [11]. The recent empirical research on interacting with technology in Junior high school exhibited that learners' innovativeness substantially affects internet learning [8]. Therefore, we hypothesize; H2: Individual innovativeness is positively linked with students' digital formal learning.

The study converges requirements to transfer from simple, practical mastery to the greater-order cognitive skills concerns linked to utilizing technology [15]. Overall, cognitive skills should comprise students' competence to employ technology for retrieving and taking information; cognitive skills also reveal how learners use technology to handle, obtain, and assess collected information [16]. When evaluating learners' digital capability, it is vital to deliver the appropriate signifiers to identify the existence of the period into accurate ranges. Cognitive Skill is learners' capability to utilize knowledge technology to take and retrieve information. Cognitive Skill comprises how students optimize technology to organize structured data and connect textual and visual data for making and interacting information with digital instruments. It is attentively linked to learners with ICT self-effectiveness, highlighting students' perceptions of their competencies to utilize ICT to accomplish aimed results [17].

Attitude to technology use is applicable in formal learning circumstances like learners' intended implementation of technology [18]. Findings on learners' aims to admit e-learning and personal high-tech applications found which attitude to use technology is the critical mediator for studying with technology [9], [18]. Therefore, we hypothesize; H3: Attitude to use worksheet digital mediates the relationship between cognitive skill and digital formal learning.

Individual innovativeness is the degree of eagerness to adopt the latest technology; well innovative people are dynamic information searchers about contemporary notions and inclined to construct a suitable manner and aim to technology receives. Furthermore, individual innovativeness lessens nervousness about computer utilization, including exposure to alter, which will cause a greater inclination to use technology utilized in virtual surroundings [19]. The prior finding showed that individual innovativeness, as one of the individual traits, positively impacts learner pleasure and aims to persist in applying online learning [20]. In the formal learning situation, learners start organized learning deeds, and, as a central individual aspect, personal innovativeness has performed a superior part in supporting digital learning. Outcomes from information system

findings reveal that individual innovativeness is a central aspect influencing the aim to utilize information technology [21]. A recent finding of studying with technology in junior high school revealed that learners' innovativeness positively impacts online learning [8]. Attitude to technology implement like interactive worksheets digital is claimed to be very applicable in formal learning circumstances such as learners' implement interactive worksheets digital for accomplishing homework [22]. By adopting interactive worksheets digital, students are eager to show an attitude to use technology that supports digital formal learning [18]. Therefore, we hypothesize; H4: Attitude to use worksheet digital mediates the relationship between individual innovativeness and digital formal learning.

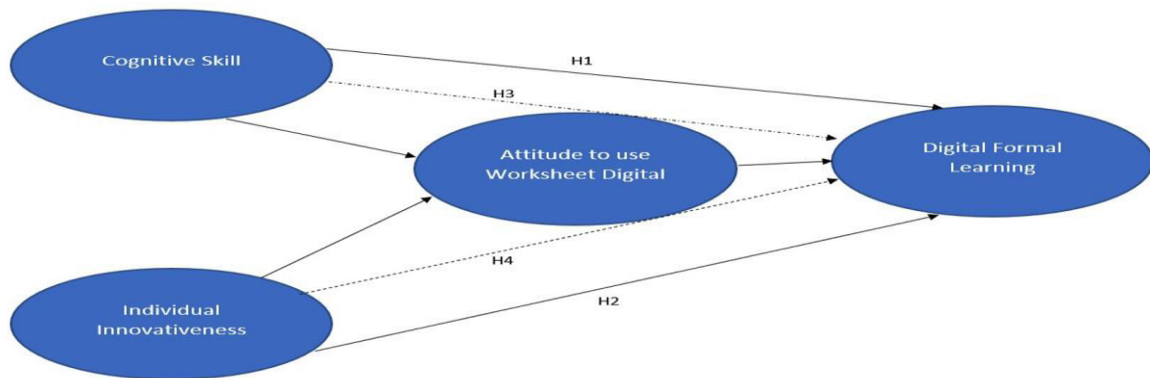


Fig. 1. Conceptual Model (→ direct effect; - - -> indirect effect)

## METHODOLOGY

The recent research employed a quantitative method with the cross-sectional model. The designed research-established examination was proposed corresponding to the frame defined over. Respondents were 167 pupils at a Yuniior high school in Singaraja, Bali Province. A sum of 274 students completed the survey in google form from September 2021 to November 2021. Altogether, 167 valid replies were collected, amongst whom 97 were female, and 70 were male. Before responding to the survey, learners were briefed on the description of digital formal learning mentioned above. The digital tools demonstrated the implementation of interactive digital worksheets on websites.

This study obtained and implemented variable measures tailored from the existing literature. Cognitive skill is measured by five items that I am able to signify the content with the display by digital instruments; I am able to categorize data in a spreadsheet by kind of

digital instruments; I can signify tiered lessons with digital instruments; I respond reliability of information while seeking online; I response trustworthiness of information while seeking online [23]. Individual innovativeness is measured by three items that I prefer to try with latest digital tools for formal learning; If I perceive related to the latest digital tool for learning, I will think of trialing with it in a formal learning situation; Amongst my colleagues, I am commonly the very initially to explore latest digital technology for formal learning [10]. Three items in formal learning contexts measure attitude to use worksheet digital, the student often goes to digital tools to find learning supports; in formal learning contexts, the student frequently dynamically seeks the latest technology to assist with learning requirements; the student keens on applying technologies to enable learning external official learning situations [18]. Digital formal learning is measured by five items that I frequently uses digital tools to improve my perception of school

lesson substances in formal learning scopes; I frequently utilize digital tools to increase knowledge of the subject; I frequently utilize digital tools to increase learning chances; I frequently utilize digital tools to seek engaging

learning experiences; I frequently utilize digital tools to engage in constructive activities [24]. Respondents were inquired to mark all items by applying a five-point Likert scale (1 “strongly disagree” and 5 “strongly agree”

Table 1. Convergent Validity

Constructs and Items	Factor Loadings	rho ( $\rho_A$ )	Composite Reliability	AVE
<b>Cognitive skill (CS)</b>				
CS1: I am able to signify the content with display by digital instruments	0,705 0,732	0,823	0,877	0,588
CS2: I am able to categorize data in a spreadsheet by kind of digital instruments	0,821 0,772			
CS3: I can signify tiered lessons with digital instruments				
CS4: I response reliability of information while seeking online	0,798			
CS5: I response trustworthiness of information while seeking online				
<b>Individual innovativeness (II)</b>				
II1: I prefer to try with latest digital tools for formal learning.	0,830 0,821	0,795	0,878	0,705
II2: If I perceive related on a latest digital tool for learning, I will think to trialing with it in formal learning situation.	0,867			
II3: Amongst my colleagues, I am commonly the very initially to explore latest digital technology for formal learning.				
<b>Attitude to use Worksheet Digital (AUWD)</b>				
AUWD1: in formal learning contexts, the student often goes to digital tools to find learning supports.	0,889	0,767	0,855	0,664
AUWD 2: in formal learning contexts, the student frequently dynamically seeks latest technology to assist with learning requirement.	0,725 0,822			
AUWD 3: the student keens on applying technologies to enable learning external official learning situations.				
<b>Digital Formal Learning (DFL)</b>				
DFL1: I frequently uses digital tools to improve my perception of school lesson substances in formal learning scopes.	0,832 0,828	0,850	0,884	0,605
DFL 2: I frequently utilize digital tools to increase knowledge of subject.	0,764			
DFL 3: I frequently utilize digital tools to increase learning chances	0,701			
DFL 4: I frequently utilize digital tools to seek engaging learning experiences.				
DFL 5: I frequently utilize digital tools to engage in constructive activities.	0,758			

The latest intended approach was embraced to evaluate the discriminant test via the Heterotrait-Monotrait ratio of correlations (HTMT), in which the HTMT should be lesser than 0.90 [26]. All variables in this representation were satisfactory for the discriminant test, which were exhibited in Table 3. The gauge of the goodness-of-fit model was revealed to be acceptable (Standardized Root Mean Square Residual [SRMR]=0.071, and Normal Fit Index [NFI]=0.928) and proved the developed model due to SRMR score < 0.08 and NFI score > 0.9 [26]. Decisively, we propose which model structure proper fitting data is also sufficient to explore the postulation for the study.

Table 2 Discriminant Validity

	AUWD	CS	DFL	II
<b>AUWD</b>				
<b>CS</b>	<b>0,653</b>			
<b>DFL</b>	<b>0,518</b>	<b>0,686</b>		
<b>II</b>	<b>0,503</b>	<b>0,553</b>	<b>0,671</b>	

#### 4.2 Examining of Hypothesis

The research evaluates the fundamental relations amongst the constructs by exploring the mediator influences which were applied to test hypotheses in the finding model. The study portrayed in Table 4 shows numbers of the finding model. Table 4 and Figure 2 depict which the path values from Cognitive Skill to Digital Formal Learning was positively significant ( $\beta = 0.134$ ;  $p$  value < 0.05), as the Individual Innovativeness on Digital Formal Learning was positively significant ( $\beta = 0.274$ ,  $p < 0.01$ ). Then,  $H_1$  and  $H_2$  are proved. Equally, the indirect relation of Cognitive Skill on Digital Formal Learning via Attitude to Use Worksheet Digital as mediator was positively significant ( $\beta = 0.155$ ,  $p < 0.05$ ), that  $H_3$  is supported. Moreover, the indirect relationship of Individual Innovativeness on Digital Formal Learning via Attitude to Use Worksheet Digital as mediator was positively significant ( $\beta = 0.361$ ,  $p < 0.01$ ), that  $H_4$  is proved. Presented the above, we establish which Attitude to Use Worksheet Digital partially mediates the relationship between Cognitive Skill & Individual Innovativeness and Digital Formal Learning.

Table 3 Hypotheses Testing

Hypothesis	Relationship	Standard Coefficients	Test Result
$H_1$	Cognitive Skill → Digital Formal Learning	0,134 **	Significant
$H_2$	Individual Innovativeness → Digital Formal Learning	0,274 *	Significant
$H_3$	Cognitive Skill → Attitude to use worksheet digital → Digital Formal Learning	0,155 **	Significant
$H_4$	Individual Innovativeness → Attitude to use worksheet digital → Digital Formal Learning	0,361 *	Significant

Note: Significant Level at \* 99% and \*\* 95%

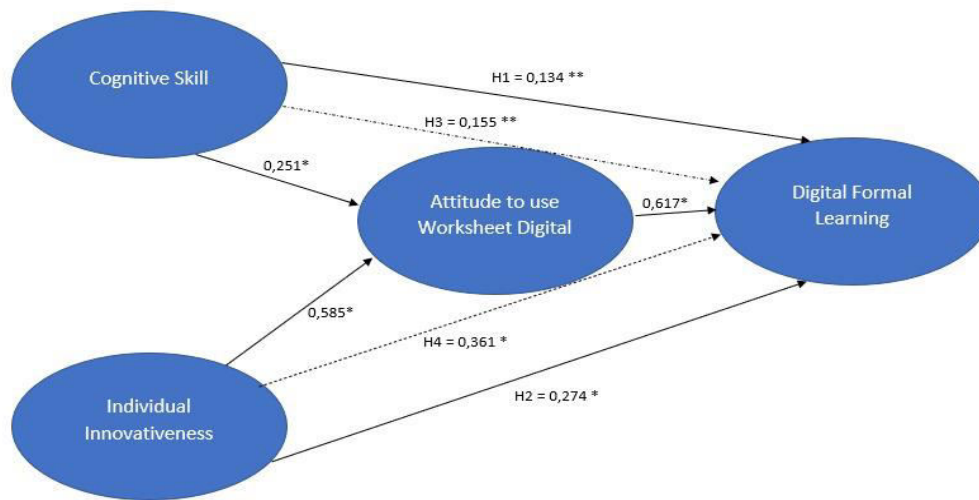


Fig. 2. Analysis Result (→ direct effect; - - -> indirect effect)

## DISCUSSION AND IMPLICATIONS

The discoveries of this study corroborate the results of [14], [10], which expose cognitive skills substantially influence digital formal learning. Related to this fundamental cognitive capability is an imperative method of looking, evaluating, and choosing vital digital instruments and technologies to reinforce learning conduct. Utilizing these technologies proposed by the programmed, learners should discover and assess other tools such as worksheet digital. Involvement with those technologies constructs a vital aspect of their finding since they expand essential academic competencies and manners and accomplish module necessities in digital surroundings. Learners should effectively utilize their digital tools as their focal workspace, comprising tool hardware, application, and operating systems such as device storage configurations and networking. Related to metacognitive schemes are script captivating, coordinating, and converting lesson objects via proper digital technology such website Liveworksheets.com. This website allows students to transform their printable worksheets into interactive online exercises with self-correction, a metacognitive strategy as processes to confirm tasks link to the applicable requirements within the appraisal construction.

Furthermore, the research outcomes maintain the empirics of [27], [21], which reveal that individual innovativeness significantly influences digital formal learning. Students with more

significant individual innovativeness are inclined to get aid and social encouragement from colleagues to help others learn. Frequently arguing obstacles or glitches they encounter in the discussion of the lesson necessities, allocating assignments to deliver or obtain an opinion or comment from mates casually, and giving moral encouragement as a channel to argue defies they have practiced in accomplishing lesson requisites. For example, students directly utilize an online interactive worksheet to assign homework from their teachers by website, and then they get feedback their assessments related to improvement subject matter.

The outcomes of empirical research data show that cognitive skill indirectly influences digital formal learning throughout the mediator of attitude to use worksheet digital. This finding has shown a sound ease degree among pupils by digital technologies and a practically comparable learner ease degree with some utilized of digital technology toward formal learning [18]. The descriptive outcomes of digital learning portray that learner are more quickly immersed in cognitive studying with digital tools when pupils are more motivated to improve their ability and increase their acquaintance with the subject. Learners conduct all those formal learning deeds with a moderately significant engagement in digital learning. Thus, utilizing

digital tools to support learning in individual formal learning scope is more common when the change on an alteration of studying by the digital tool is expected in the formal learning scope. When the use of technology such as worksheets digital supports their faiths and methods of studying [22]. At the same time, learners understand the matching between technology utilized and their learning type and demands. Learners are possible to implement technology for studying. Then, learners studying in conditions of expanding their notions about studying and improving their accessibility to various methods of studying can reinforce didactic compatibility, encouraging positive behaviors toward technology utilization and indirectly improving learners' chance to implement technology for studying.

Moreover, the outcomes of empirical research data show that individual innovativeness indirectly influences digital formal learning through the mediator of attitude to use worksheet digital. So, learners with greater individual innovativeness incline to have more positive behavior to employ worksheets digitally. Our results prove that individual innovativeness is a characteristic element; innovative students can create more positive faith in up-to-date digital tools and establish good technological behavior. In this context, they might be more tended to digital formal learning. The pupils define to perform in their learning as a situational explanation of the study condition [6]. Their understanding of the evaluation procedure, educator, performed principles, and the curriculum attention and prospects have a convincing influence on their actual high-tech conduct. While they experience utilizing technology well-matched with their situated understanding of the learning condition, they would enthusiastically implement technology for studying. Then, to create and improve the felt educational congruent, educators might require to, at minimum, intentionally integrate the utilization of technological sources and instruments into lesson expectancies and exercise tasks [17]. Throughout corroboration of the relation between the experimentation with recent digital

tools for formal learning and technology use, learners would feel the importance of utilizing technology for studying.

Finally, the implication finding showed that students felt that obtaining well cognitive skills, well individual innovativeness, and a positive attitude toward adopting worksheet digital for their assignments. They were helpful to be perceived the utilize of digital tools in their formal learning in cognitive areas. They adored the notion of implementing digital tools in their official learning and didn't sense worry or cautious concerning such as practicing interactive worksheets digitally. So, the digital tools would be comfortable to utilize and enhance their output, boost their society for studying, and deliver satisfying learning. The learners proposed utilizing these digital tools while officially incorporating them into their studying. The pupils who felt they got sound degrees of cognitive skill took more excellent positive experiences of utilizing digital tools in their formal studying than those who felt they got low degrees of cognitive skill. Then, to persuade pupils to apply technology for studying, we may need to inspire and promote collaboration and dialogs amongst pupils on their technology capability to establish chances for learners to obtain enthused and absorb knowledge from others.

## CONCLUSION AND LIMITATION

These finding results have given some enticingly beneficial parts of the evidence of the cognitive skill and individual innovativeness to enhance digital formal learning for the students in Junior High School at Singaraja City, Buleleng Regency, Indonesia. However, the direct effect of individual innovativeness on digital formal learning is more significant than cognitive skills. Thus, the research proposes that the attitude toward digital worksheets mediates the link between cognitive skill & individual innovativeness and digital formal learning. The exciting result suggests that the role of attitude to use the worksheet as a mediator variable is a more significant influence on the relation between cognitive skill toward

digital formal learning rather than the relation between individual innovativeness toward digital formal learning.

There are limitations in this research that propose some forthcoming research offers. The examination employs a cross-section schema which will allocate a longitudinal trial for the subsequent study to explore the influences of cognitive skill and individual innovativeness on attitude to use worksheet digital that improves digital formal learning. Finally, this research is performed on only several state junior high schools and located at Buleleng Regency. Collecting data from private junior high schools and concern about Bali Province is attractive and valuable to stipulate more substantiation of outcomes.

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