

# **Identifying The Role of Active Learning toward Employee Skill Development and Product Development Processes (A Qualitative Case Study of Digital Start-ups in Indonesia)**

## **Abstract**

The biggest challenge faced by digital start-ups is balancing internal new product development processes with rapid technological advancement. Therefore, organizations require a strategic approach to managing their employees' learning and experimentation processes in the workplace. Specifically, the active learning approach is known to enhance individuals' experimental learning in the workplace. Accordingly, our research aims to investigate the critical dimensions of active learning using a qualitative case study. We collected data through semi-structured interviews, obtaining insights from 17 managers across three digital start-ups in Indonesia. We obtained a thematic analysis to identify key dimensions within the employee's active learning. Furthermore, we conducted theoretical triangulation to ensure the validity of the data. Our findings indicate that active learning is essential for improving individuals' skill development, thereby aiding in the new product development process. Additionally, our analysis identifies four critical dimensions within the active learning mechanism.

**Keywords** -- active learning, learning process, pedagogy in organisation, knowledge sharing, workplace innovation, skill development, product development

**Paper type** -- Case study

## **Introduction**

The new product development process is costly, presents complex business challenges, and necessitates learning from failures for effective problem-solving (Green & Weerawardena, 2021). Additionally, organizations require more extensive learning experiences to support this process (Goffin et al., 2019). In today's competitive business environment, it is essential for organizations to continuously refine employees' skill sets to facilitate new product development and align with their career aspirations (Molloy & Noe, 2010). Active learning is a critical approach for developing the skills needed in new product development. It has been demonstrated that skill acquisition within this process heavily relies on individuals' informal learning, particularly through active learning. Active learning plays a pivotal role in fostering growth and skill development within organizations (Jackson, 2015). Moreover, it empowers individuals to take control of their knowledge and skill development, enabling them to respond effectively to market competition demands (Dong et al., 2023). Given the significance of employee learning, this research aims to examine the learning processes that adequately support both individual career aspirations and new product development.

One of the learning approaches that allows exploratory and experimental learning and allows an accumulated skill development process that is beneficial for the new product development process is active learning (Zimmermann & Ravishankar, 2016; Nandini et al., 2022). Active learning, also known as self-directed learning intervention, that able to bridge the individual's experience of learning and working (van Hout-Wolters et al., 2000).

Moreover, active learning has a learner-centered orientation that can help individuals speed up knowledge acquisition and skill development processes (Pelley, 2014; Llorens et al., 2017). Also, the

role of active learning delineates the process of new product development. Previous research evidently showed that active learning can support knowledge transfer and continuous improvement for innovation (Bartezzaghi, 1997; Goffin et al., 2010)

The use of active learning has been a double-edged sword. Active learning leads individuals to proactive behavior in the workplace (Tims & Kooij, 2014). Additionally, active learning is also known as beneficial to creating excitement and engagement in the workplace (Bakker et al., 2012). However, the effectiveness of the active learning approach relies on an individual's willingness and engagement in their work processes (Taris et al., 2003). Additionally, the current evidence also showed various approaches to defining and measuring active learning (Prince, 2014). Several researchers have highlighted the importance of developing a comprehensive and precise definition of active learning (Hartikainen et al., 2019; Doolittle et al., 2023). In accordance with that, our research aims to seek the active learning framework that can build an organization's competitive advantage and innovation through case studies with qualitative methods. Through this method, it allows us to uncover the complex phenomenon of employees learning within new product development in specific contexts such as digital start-ups (Baxter & Jack, 2008; Simons, 2009; Starman, 2013). Digital start-up companies have organization policies and cultures that are agile and adaptive. It allows them to have more extensive room for experimentation to create innovation following the market trends, demand, and technological advancement. Therefore, the case study in our research will contribute to providing insights on how to support an individual's learning process in agile organizations.

This paper begins with an explanation of the current theories and evidence of active learning in the digital start-up context. Second, we explained the case study methodology and data analysis used in this research. Then, we showed the research result from the semi-structured interview we established with the key informants. Further, we analyze our findings with the current theories to establish our framework. Finally, we explained the conclusion, research implications, limitations, and future research in the last section.

## **Theoretical Framework**

### **Active Learning in Digital Start-ups**

In an organizational context, active learning was initially proposed by London and Smither (1999). They explained that organizational changes encourage a continuous learning environment that supports the skill development process through an independent process managed by employees. In detail, Bell and Kozlowski (2008) emphasized three learning aspects within active learning. It consisted of exploratory learning, error-encouragement learning, and emotional control within the learning process. Meanwhile, Katz-Navon et al. (2009) emphasized the critical role of active learning climates within the active learning mechanism to increase the success of adaptation to the challenges in the workplace. Additionally, Keith and Wolff (2014) emphasized active learning through the cognitive, motivational, and emotional processes.

There are several positive outputs of the active learning process within organizations. For example, Bell and Kozlowski (2008) explained that active learning involves cognitive, motivational, and emotional processes. In addition, one of the benefits of this learning process is providing flexibility for employees to improve their abilities quickly and adaptively according to dynamic market needs (Keith & Wolffs, 2014). The research from Keith & Wolffs (2014) also emphasized that this approach requires individuals to take the initiative toward their learning needs. It aims to maximize personal responsibility for their learning process. In addition, Ito and Kawazoe (2015) also emphasized that the active learning approach encourages employee development, higher agility, and adaptivity. This

process also indirectly encourages innovation in the product development process within the company. Additionally, active learning also fosters creative ideas that are critical to the company's strategies for building product innovation (Peters, 2008; Nylen & Holmstrom, 2015).

Furthermore, several researchers have tried to uncover the related mechanism within an individual's active learning experiences in the workplace. For example, Ivancic & Hesketh (2000) found that experiment in the workplace allows a higher knowledge transfer process. The experimental learning experiences help employees quickly adapt to the challenges in the workplace. Meanwhile, research from Taris et al. (2003) linked the concept of active learning with the job demands-control model. Their research showed that the key to optimizing an individual's active learning in the high job demand is to allow them to have high job control at the workplace.

Given the importance of the role of job control in the workplace, it is shown that the active learning mechanism highly relies on the company's policies and cultures. It is evidently known that digital start-up companies are known as new organizations that always develop innovative products (Pratiwi et al., 2018). Also, one of the main advantages of start-up companies is that they have policies and work processes that tend to be flexible and provide more space for their employees to develop their creative ideas more easily and quickly when compared to large companies (Leavitt, 2007). Furthermore, Car-denas-Navia and Fitzgerald (2019) add that these start-up companies tend to have a continual learning process. Consequently, employees at start-up companies can actively improve their skills and knowledge to cope with technological changes.

## **Methodology**

### **Case Study Design**

This study uses a case-study approach to explore the learning process in digital start-ups. The case-study approach has several strengths. Namely, it can provide a detailed analysis of a company's work and individual's learning processes. This approach also helps researchers find new patterns or insights in the field (Quei-rós et al., 2017). Digital start-ups are often agile organizations and are more flexible and faster in adapting employee skills to market demand. We obtain a semi-structured interview design in this study (McIntosh & Morse, 2015).

This research focuses on three digital start-ups in Indonesia. Both have experienced a high level of income growth over the last five years. We conducted semi-structured interviews with 17 managers with more than five years of experience in the same industry as their current company's industry. We interviewed the key informant based on specific questions about how their employees learn and the new product development process at the workplace.

After the interview process, we carried out a transcription process, and then the interview data was imported into NVivo for analysis. We analyzed existing transcripts using Neuman's techniques (2003). The first stage is open coding, and in this stage, we conducted a thorough review of each transcript. In the second stage, we performed axial coding. We grouped information into more specific themes in this stage, namely various aspects of the learning mechanism. In the last stage, we conducted selective coding, namely checking the overlapping themes, and comparing them with the uniformity in the informants' responses. In this process, we also found new themes, such as the output of the learning process (i.e., product development process and employee skill development). To maintain the validity of the data, we carried out a triangulation process involving theoretical triangulation. Denzin (1970) explains that this method uses analysis between findings with existing theories.

## Result

### Case Study of Digital Start-ups in Indonesia

Our case study consists of three digital start-ups in the creative industries sectors. Based on the results of our coding, we found that there were three active learning experiences and the role of active learning climates. The first theme is a learning environment that derives from an active learning climate. We found that those three digital start-ups support their employee's learning process by providing high control but provide support according to individual needs. Furthermore, our findings also found the three learning experiences within active learning. We found the process of error-encouragement learning, experimental learning, and emotion-control strategies within day-to-day employee's learning (See Table 1).

**Table 1. Themes and Illustrative Quotes of Active Learning Process**

| Main Themes                 | Sub Themes                      | Illustrative Quotes                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Environment        | Active Learning Climate         | "We led our employees to have their own choice on learning specific skills to solve their job demand. But also support toward their needs individually. It aims to make the learning process is easier for them, especially in their skill development process. Consequently, their knowledge and skill accumulation will help to increase company's profits by creating new product" |
| Active Learning Experiences | Error-Encouragement Learning    | "In terms of learning, it's more likely based on each individual. So, if they get a client and there is a problem, they will immediately look for a solution. It could be they will try to adopt the external knowledge"                                                                                                                                                              |
|                             | Experimental Learning           | "They have to get used to use to searching for the skills and competencies needed by themselves regarding the skills/completion needed to fulfill client's demand. From that demand, they then start to independently learn those new knowledges or skills"                                                                                                                           |
|                             | Emotion-Control Strategies      | "In the learning process they usually accompanied by their mentors to had better emotional support to deal with high pressures from clients or market targets"                                                                                                                                                                                                                        |
| Learning Outputs            | New Product Development Process | "Our market condition is so agile, so employees must be able to quickly improve their capabilities so that they can innovate in the new product development process. Therefore, if you don't want to learn, you will be left behind with those market needs"                                                                                                                          |
|                             | Individual Skill Development    | "Usually, my employees will take the initiative to learn the knowledge/skills they need for the newest technology. This is beneficial for developing more innovative products for clients."                                                                                                                                                                                           |

First, experimental learning accelerates the absorption of new capabilities to cope with a dynamic market or client demand. Meanwhile, the error-encouragement learning is to fulfill the current clients

and market demand that tend to be volatile. Lastly, the emotion-control strategies within the learning process are critical processes for handling the demand from clients and market targets. These three learning experiences are beneficial and played an essential role in encouraging individuals to focus on fulfilling the current job demand to create innovative new products following technological advances and market changes (See Tables 1 and 2).

**Table 2. Summary of learning codes and subcodes**

| First Tier Code             | Second Tier Code             | No. of Cases | No. of References |
|-----------------------------|------------------------------|--------------|-------------------|
| Learning Environment        | Active Learning Climate      | 12           | 17                |
| Active Learning Experiences | Error-Encouragement Learning | 12           | 23                |
|                             |                              | 13           | 16                |
|                             | Experimental Learning        | 15           | 23                |
|                             | Emotion-Control Strategies   | 15           | 25                |
| Learning Output             | Individual Skill Development | 15           | 38                |
|                             | Product Development Process  | 16           | 38                |

Our next step is to review the results of the existing coding to see if other factors appear as outputs in the learning process at these three digital start-ups. Table 1 shows the coding results and the illustrative quotes. Based on our coding process, we found two outputs: the importance of the learning process in supporting the success of the product development process and individual skill development. The learning process in our case study helps develop existing products according to market conditions or client requests. Moreover, we found that the individual's skill development process is the bridging of the success of the idea's implementation in the new product development process. It shows that the products within the three digital start-ups in our case study rely on an individual's knowledge and skill set.

We also found that the company's support driving employees to have three learning experiences of active learning drives higher optimal processes on new product development implementation. The active learning process here cannot stand alone without being accompanied by a learning environment, namely an active learning climate. Both active learning climates and employees' active learning experiences drive organizations in more effective and efficient ways to create innovative products following market changes and technological advancement.

## Discussion

The three start-ups in our case study are derived from creative industries sectors, in which the dynamic capabilities of the organization are based on co-specialized assets that produce a competitive advantage (Augier & Teece, 2009). In this case, these production processes inside companies require specific competencies in terms of individual skills and experience, which are acquired through a learning process.

Mainly, when the market is volatile, employees' learning becomes a critical aspect of competitive advantage. Align with that, we found that the three digital start-ups had significant challenges in creating innovative products following the market demand that is constantly changing. Therefore, our

findings depict the field conditions of an organization's effort to build innovative products in a volatile market.

Further, in the next stage, we will do a cross-case analysis between our findings and the current literature. We identified several authors that defined the active learning mechanism. Based on that, we will match those definitions with our findings in this case study (See Table 3).

**Table 3. Active Learning Definition**

| Author (Year)             | Definition                                                                                                                                                           | Construct Availability  |                              |                       |                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------|-----------------------|----------------------------|
|                           |                                                                                                                                                                      | Active Learning Climate | Error-Encouragement Learning | Experimental Learning | Emotion-Control Strategies |
| London& Smither (1999)    | Learning activities that engage students in the process of learning through doing, thinking, and discussing                                                          |                         |                              | <b>V</b>              |                            |
| Ivancic & Hes-keth (2000) | active learning requires students to do meaningful learning activities and think about what they are doing                                                           |                         |                              |                       | <b>V</b>                   |
| Mayer (2004)              | a process that engages learners in mental activities such as problem-solving, critical thinking, and making connections between new information and prior knowledge. |                         | <b>V</b>                     | <b>V</b>              |                            |
| Bell & Kozlowski (2008)   | Active learning is derived from three learning experiences such as error-encouragement, experimental and emotion-control strategies.                                 |                         | <b>V</b>                     | <b>V</b>              | <b>V</b>                   |
| Katz-Navon et al. (2009)  | a method that engages students in the learning process through activities and/or discussion in                                                                       | <b>V</b>                |                              |                       |                            |

|  |                                                       |  |  |  |  |
|--|-------------------------------------------------------|--|--|--|--|
|  | class, as opposed to passively listening to a lecture |  |  |  |  |
|--|-------------------------------------------------------|--|--|--|--|

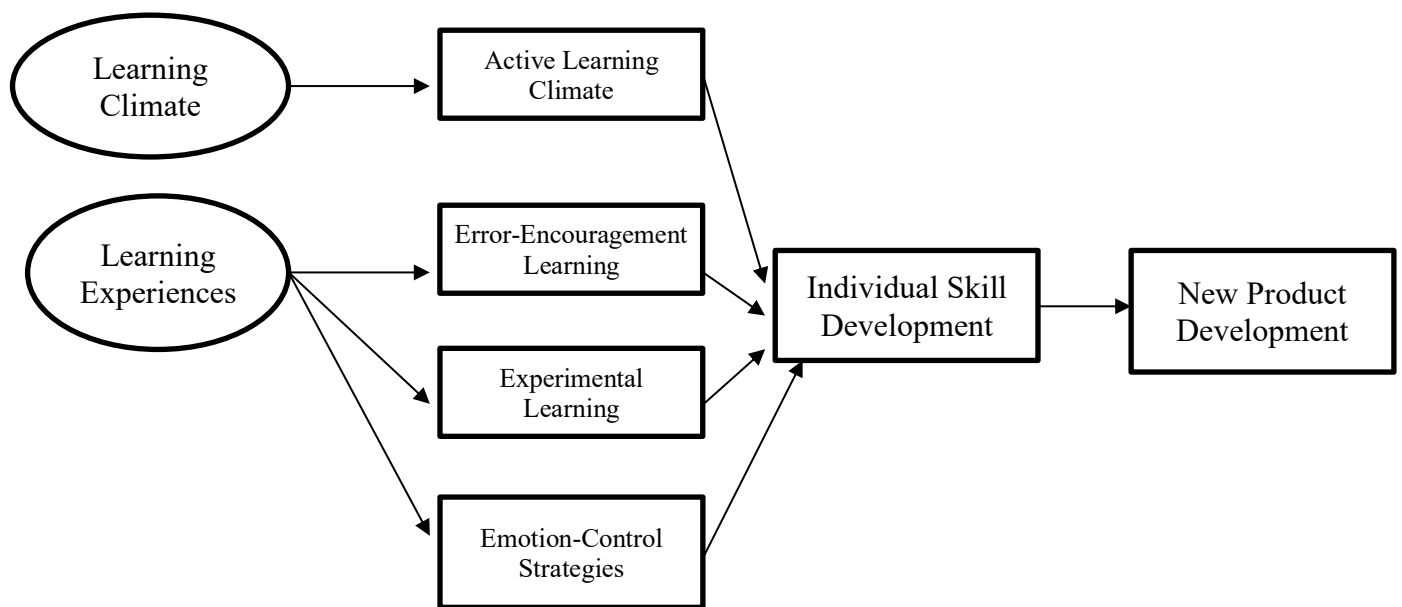
Based on our analysis of current definitions and our case study findings, we found four main characteristics to support an optimal active learning framework, namely, active learning climate and three main learning experiences such as error-encouragement learning, experimental learning, and emotion-control strategies.

Our findings highlighted that the learning climate is critical to drive individuals to have active learning experiences. As shown in Table 3, active learning climates such as organization's support are critical to driving individual's active learning experiences. (Naveh et al., 2015). Thus, the active learning climate also optimizes the output from the active learning itself, which in the context of companies are new product development process and individual skill enhancement (Shekar, 2007; Pelley, 2014).

We have then identified the definition of active learning based on previous research and analyzed it with the findings in our case study. First, London and Smither (1999) defined active learning through active learner participation in the learning process to improve skills based on work demands. It allows individuals to have experimental learning. Second, in 2000, Ivancic and Hesketh added that the active learning mechanism involves self-regulation of emotion during the learning process. Then, in 2008, Bell and Kozlowski emphasized the three learning experiences within active learning, such as error encouragement, experimental learning, and emotion-control strategies during learning. Lastly, in 2009, Katz-Navon et al. defined it as a method that drives individuals to be more active in the learning process. It shows the critical role of classes or organizations in supporting the process of active learning individually. Notably, our case study emphasized that an active learning climate, such as high job control and support toward employees' active learning, is able to enhance an organization's capabilities to fulfill the opportunities in the market through employee skill development (Taris et al., 2003). In conclusion, our findings highlighted the role of active learning climates and three active learning experiences as a framework for optimal active learning mechanisms.

Furthermore, the digital start-up context tends to exploit market opportunities through human resources capabilities based on their employee's skill development through an active learning process (Nylen & Holmstrom, 2015). One of the main reasons is that active learning allows individuals to have experimental and error-encouragement learning. This active learning process is based on challenges or demands from clients based on various projects (Wedel et al., 2005). The active learning process encourages reflective thinking by examining what skills are needed. In addition, it promotes a level of individual engagement in the learning process, allowing them to individually solve problems or meet the needs of clients, especially in the new product development process (Dalmaz et al., 2015). Therefore, an active learning mechanism is essential and crucial to create innovative products.

Our findings demonstrate that emotion-control strategies play a crucial role in enhancing active learning experiences, thereby maximizing customer satisfaction and creating a sustainable competitive advantage through individual skill development (Schein, 2010; Jaramillo et al., 2007). In digital-based companies, employee skill development—specifically in mastering new technologies or approaches to product innovation—is essential for creating new, more innovative products. Our research underscores that an active learning environment and experiences are key to developing employee skills and advancing product development, particularly in responding to market or client demands and strengthening the company's competitive advantage (see Figure 1). In summary, the current research reveals a significant gap in understanding and implementing active learning strategies in the workplace (Luth et al., 2024). Thus, our study contributes by identifying specific learning approaches and strategies within active learning mechanisms that significantly enhance individual skill development in the context of new product development.



**Figure 1. Conceptual Findings**

## Conclusion

Our finding emphasized the critical factors within the active learning mechanisms that can optimize individual skills and new product development. We found that active learning climate and three-active learning experiences digital start-up companies. It consisted of error encouragement, experimental learning, and emotion-control strategies during the learning process. Specifically, the active learning climate can give employees more freedom and control and develop a type of mindset that focuses on problem-solving and high levels of initiative. This mechanism can encourage individuals to be able to carry out a reflection process to assess which skills are needed and increase the level of engagement with their learning. Error encouragement and experimental learning are known as the keys to developing skills and products within organizations.

Meanwhile, the emotion-control strategies help individuals to communicate the product and foster engagement in the experimental learning process. Our findings also emphasized that the new product development process in digital start-up companies requires active learning climates such as high job control and support. Therefore, such companies need to maximize the active learning experiences and climate within the organization to maximize employee skill development. Also, the active learning mechanism is critical to building an innovative product to create an organization's competitive advantage in the dynamic market. Our research is limited to specific types of digital start-ups. Therefore, future research can investigate the underlying learning within new products and skill development processes in different areas.

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