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Artificial-Intelligence powered App as learning aid in improving learning autonomy: Students' perspective

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The disruption and development of technology has rapidly transformed the educational system these days. Its practicality has driven students to equip themselves with technological devices and software, particularly those with Artificial-intelligence. This study aimed at identifying students' perspective on the implementation of Artificial-Intelligence Powered App as Learning Aid in Improving Learning Autonomy. Specifically, this study identified whether or not the use of Artificial-Intelligence Powered App as Learning Aid could change learners' perspective on autonomous learning and improve their learning autonomy. Further, the perspective being investigated is related to learners perspective on their role in fostering autonomy as well as learners' perspective toward the teachers' role. The researchers conducted the study by following a collaborative action research. The data of the study were collected using questionnaires and semi structured interview. Then, the results of the questionnaires were analyzed quantitatively and the results of the interview were analyzed qualitatively. This study finds out that incorporating artificial intelligence powered apps has successfully changed learners' perspective on autonomous learning. Besides, the use of artificial intelligence powered app also works positively in fostering learners' autonomy. Since this study was conducted using action research method, the result of the study cannot be generalized to a larger population. Thus, an experimental study that apply inferential statistics analysis is needed to support the results of the study.

Keywords: artificial intelligence, learning autonomy, students' perspective, vocabulary

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INTRODUCTION

The development of digital technologies has greatly transformed the face of our education today. Technology is integrated in nearly every part of instructional process, as in teaching, learning, assessing, and promoting learner autonomy. According to [Ahmadi \(2018\)](#) and [Rojas et al. \(2020\)](#), technology provides a lot of relevant resources to EFL learners with easy and fast access allowing them to schedule to their learning flexibly in addition to formal learning. In other words, technology can function as a learning support for learners to enable them having more exposure to the target language.

Compared to using personal computer, Mobile Assisted Language Learning (MALL) is considered more preferable on the hands of the learners ([Yudhiantara & Saehu, 2017](#)). This preference is due to the fact that MALL offers affordable features, interactivity, accessibility, privacy, and more importantly multifunctionality ([Shi et al., 2017](#)). [La Hanisi et al. \(2018\)](#) viewed the inseparable connection between learners and their mobile devices is because they

are able to perform many things with their phones, some to mention are texting, uploading and downloading pictures and videos, browsing for information, and make use of some application provided to support their learning. In addition, [Karakaya & Bozkurt \(2022\)](#) mentioned that the interaction between the students and their devices (MALL) provided providing learner agency and motivation by empowering autonomy. Their study found that MALL has recently veered to include the use of mobile devices in informal learning contexts and outside the classroom.

In performing MALL, teachers have utilized relevant software to be used in classroom interaction, such as gamification, social media, audio for listening, and other applications ([Cepulal, 2019](#); [Kamilah, 2021](#); [Sadiq et al., 2021](#); [Tamtama et al., 2020](#)). In Indonesia, the use of mobile devices in language classrooms has increased significantly during the Covid-19 pandemic in early 2020, where both teachers and learner to shift the instructional process to be fully online, albeit both parties are not fully ready with it ([Mahendra, 2021](#)). The successful use of technologies in online classroom setting has been delivered by several scholars in related area. For instance, [Xiuwen & Rgazali \(2021\)](#) have successfully employed TikTok as one of the trending social media to be used as tools of teaching. They take advantages of its popularity within learners' environment to create an online classroom situation that support the language learning. The study found that this platform enables students to improve their communicative competence to certain extent. The optimal utilization of digital tools can also be rooting from developing teachers own platform as what has been done by [Martas-Abril \(2021\)](#). One of the strong points highlighted in this study is that the use of self-designed technology motivates students more to interact due to its interactive feature. Such examples of successful uses in different educational contexts is possible since traditional teaching and learning methods were less effective in engaging learners and motivating them to achieve the learning goal ([Zieni, 2019](#)).

Gitsaki and Robby (as cited in [Zieni, 2019](#)) through an evaluative study on the use of iPads at Zayed University in the UAE mentioned that the use of the technology in the class increased student participation and motivation. Their method created practice ready and led the learners to be autonomous. Another positive impact showed that m-learning (mobile learning) exposed the learners to a large number of authentic materials also enabled new ways of learning emphasizing continuity or spontaneity of access and interaction across different contexts of use. In connection to the cognitive aspect, m-learning enhances learner autonomy on some levels. "It allows the learner to reduce the memorization time and gives more time for higher levels of thinking skills such as application, analysis, evaluation, and creation." ([Zieni, 2019](#))

These numerous successful findings on the use of digital tools in teaching and learning process do not indicate that there is no problem with its implementation. In contrast to these findings, several others consider that implementing technology in classroom setting alone will not cover all

other factors contributing to the success to learn English. A study from [Rahayu & Wirza \(2020\)](#) reveals that among 102 teachers who become the participants, more than half of them state that learning with technologies in online learning is difficult for them to conduct. Similarly, [Ramadani & Xhaferi \(2020\)](#) emphasized that teachers alone cannot guarantee that they can overcome the challenge to use technology. With so many platforms provided, it is hard for them to synchronize and use some of them at once.

Therefore, it is necessary to state that learners themselves plays a key role in the instructional process. Studies have shown the willingness of students to actively and independently learn by themselves escalate their achievement compared to only relying on their receptive skills in classroom. Moreover, technology in the hands of the learners could be more effective since they are the generation born with technology. [Ningrum & Arrasyid \(2021\)](#) point out that learning with MALL is fun, interesting, and can be done more easily.

[Pegrum \(2014\)](#) mentioned that m-Learning (mobile learning) points out that it could enhance anywhere, anytime learning and learners can learn at their own pace as well. The technology is to facilitate, support, enhance, and extend the reach of teaching and learning. Besides, their informants state that they are more productive since the device enables learners to gain information quickly compared to traditional classroom activities. Another study by [Darsih & Asikin \(2020\)](#) reflect that students feel it is easier to use mobile apps to help their learning since the applications are often used by them. In the higher education context, college students view using technology as learning aid are very helpful to achieve their learning target ([Habibie, 2021](#)).

Clearly, making them motivated and looking at their perspective only on the use of technology are not sufficient. The estuary to the use of technology is to promote their learning autonomy. The basic idea of being autonomous is that learners being responsible of their learning by planning, controlling, and evaluating their target ([Muhammad, 2020](#)). Learner autonomy is referred to by several words in language education and has diverse semantics. It included learner independence, self-directed or autonomous learning, self-instruction, self-access learning, independent learning, and autonomous learning. Likewise, [Yuliani & Lengkanawati \(2017\)](#) argue that promoting learning autonomy means more opportunities for learners to set their objectives, manage their learning strategies, the content order to learn, up to the evaluation process. That being mentioned, stating a learner being autonomous can be seen by whether or not they fulfill the indication such as self-direction, self-access learning and individualized instruction ([Kumaravadivelu, 2003](#); [Kumaravadivelu, 2005](#)). In addition, even promoting learner autonomy is not spontaneous, being aware of the autonomous condition is the first step to learning improvement ([Khaidir et al., 2020](#)).

However, such ideal condition is not easy to realize. Allowing them to set and plan their learning fully from the initial stage is very hard to do. One of the challenges is to create the proper condition for learners to learn on their own

([Mohamed Jamrus & Razali, 2019](#)). Learners in EFL context often being teacher-guided for too long which leads them to be unable to be responsible with their own learning. This is proven by [Oveshkova \(2018\)](#) whose preliminary study shows that the teacher-centered environment results in making the learners passive and unprepared to take charge and regulate their own learning.

A preliminary study was also conducted in prior to this action research. The preliminary study took place at the researcher's class, at the General Vocabulary class in State Hindu University of I Gusti Bagus Sugriwa Denpasar, with 35 students in total. The preliminary study was conducted by distributing questionnaire and observation sheet. The questionnaire exhibits students' previous condition on performing autonomous learning on the following aspects; 1) students' primary experience to autonomous learning, 2) students' perception on lecturer's roles, 3) students' perception on their roles.

The preliminary finding of the first aspect reveals that more than half of the students did not have the experience to conduct self-directed learning previously with 41.7% showing strong indication and 16% with greater indication of lack of experience. Moreover, 32.56% of students indicate that they are uncertain whether or not have performed autonomous learning. On the other hand, only around 9.74% are quite certain that they have the capability to learn autonomously.

Second, the students' preliminary perspectives on lecturers' role indicates that they lack their autonomy on the aspect of reliance to lecturers. The data shows that learners are still being contingent on lecturers' role in deciding the topics and materials, stating the objective of the learning, and supervision from the lecturers. One of the relieving facts is that around 30% of the learners are aware that their job is not finished even the given tasks are accomplished. Additionally, 20.5% of the learners are uncertain whether they should depend on lecturers, while 72.07% reveals their dependence on the lecturers.

The third aspect of the students' perception on their roles is revealed in the preliminary study that the percentage of learners who are aware of their role is quite moderate with 27.7%. Surprisingly, 52% of the students are uncertain of their roles. This means more than half of the participants are unaware whether or not they have performed learning autonomy. Some of the specific aspects with the highest level of uncertainty includes consistency in learning, checking their own progress, and setting their own target.

The preliminary findings imply that the unsatisfactory result of the university students' autonomy in learning needs some improvement. Fostering it can be done through several means; one of which is by providing them the learning aid. Artificial Intelligence powered app demonstrates a great contribution in terms of giving aid and enhance language learning. Its role in supplementing teaching and learning has led many program developers to create a specific program for improving certain skills ([Junaidi et al., 2020](#); [Kholis, 2021](#); [Sezgin et al., 2020](#)). Additionally, some research on AI with other platforms has proven that AI enhanced

students' autonomy on learning the language ([Eberding et al., 2020](#)). AI also provided various tasks where the students could try. AI offers numerous possibilities for task construction and tuning, enabling the separation of single parameters across complexity dimensions.

Giving the positive effect from its usage, it is hardly surprising that many prefer to use artificial powered app to be integrated into the instructional process. In terms of the practicality, it is regarded as advanced technology which is easy to be used even without much supervision from teachers since it is powered by algorithm ([Sun et al., 2021](#); [Suryana et al., 2020](#)). This is also the one of the most supporting grounds to the current study to use AI powered app to change students' perspective to autonomous learning. Besides, there has not been many studies giving attention to the use of AI powered app specifically in fostering autonomous learning.

An AI powered app named Mondly has also been used in language classrooms. Mondly is a language learning app which allows students to learn different languages as it works as a learning aid to reinforce basic words and concepts students may have learned in their class. Studies on this app are limited to exploration of the app ([Cowie & Alizadeh, 2022](#); [Jung, 2019](#)) and its particular feature of virtual reality (VR) use for enhancing language skills ([Jensena & Cadierno, 2022](#); [Nicolaidou et al., 2021](#)). Learning the scarcity of studies on AI powered app to foster learner autonomy, the present study investigated the use of Mondly as an AI powered app in a language classroom aiming. As it claims to work inductively, allowing students to explore the language as how they like to learn it, it is therefore expected that the app could aid to shift and improve students' perspective of learner autonomy as compared to the preliminary findings on the topic.

Based on the aforementioned explanation, the formulation of the research problems can be provided as follows: 1) how does artificial intelligence powered app improve learners' role in autonomous learning based on students' perspective? 2) how does artificial intelligence powered app improve change teachers' role from students' perspective?

METHODS

This present study employed a collaborative action research. This design was chosen due to the involvement of not only lecturers as researchers, but also group of students where both parties seeing this as outcome-based investment. There were 35 students involved in this study consisting of 12 male and 23 female students of the first-year majoring in English Language Teaching at university level in Bali. These students were in intact group and taking general vocabulary class as one of the courses. This study involved five steps adopted from [Sagor \(1992\)](#) covering (1) formulating problem as what has been explained in the previous part, (2) planning action, (3) collecting data, (4) analysing data, and (5) reporting results. Action planning depicts the procedure

of introducing them to the AI powered app to foster their autonomy. In this respect, the AI chosen is Mondly. Mondly is an artificial intelligence powered app that functions as learning aid to enhance students' vocabulary. It has several modules from basics to specific regarding vocabulary in the target language. It is equipped with speech recognizer to help students to not only know the words, but also getting feedback about their pronunciation from the app. This app is also designed with reward system to motivate students to learn on their own and finish the module based on their target. Thus, the action planning can be seen in Table 1.

TABLE 1 | The Procedure to Foster Autonomous Learning with Mondly

No	Description
1	Introducing the Mondly app to the subjects with all features equipped in it as well as how to use it to enhance their learning.
2	Asking students to set their target to finish the module, the strategies they use to accomplish it and note every difficulty that they might face during its accomplishment
3	Present them with freedom to work on their project based on the target they set earlier.
4	Providing consultation if students require one during their work on the project
5	Evaluating the effect of Mondly App toward their learning autonomy

The presented procedures were conducted for two months from 20th April - 22nd June 2022. The data were collected through questionnaires where the result of the questionnaire before treatment is exploited to be the basis to set the criteria of success. There were two criteria of success set in this study: (1) There is a change of students' perspectives on the lecturers roles from being too dependent on the lecturer to be more self-regulated, and (2) There is a change of perspective on learners' role from most of the them are uncertain to become more aware of their roles. Secondary data were collected through semi structured interview to reveal students feeling in using the app. The data were then analyzed quantitatively by comparing the result of the questionnaire before and after the using Mondly app as learning aid to foster their autonomous learning. Aside from quantitative analysis, a qualitative analysis on semi structured interview was used to support the primary data.

RESULTS AND DISCUSSION

As previously mentioned in this paper, the artificial intelligence app used in this study is Mondly. It is a specific app designed to enhance learners' vocabulary building. In order to operate the app, learners have freedom to choose which level and what module they eager to learn. They also have the privilege to set their target and select their learning strategy. The roles of the lecturer in this respect are to introduce them to the app including how to use it, allocating

the time constraint for them achieving target, and being open if the learners need support. Specifically on time allocation, it is necessary to conduct since the evaluation on the change of the perspective needs to be done after some period of time. In this respect, the given allotted time is 4 weeks since the app is introduced. Here is a sample figure of the app in Figure 1.



FIGURE 1 | The Home Image of Mondly App

The evaluation on their perspective is conducted after the allotted time by administering the same questionnaire that contain the perspective on their role. The findings on the perspective on lecturers after the action is presented in Table 2.

The given information in Table 2 above indicates that there has been a significant change of students' perspective on the roles of the lecturers toward their vocabulary learning. Learners begin to realize that they can be more independent than they initially thought of. This is proven by the data that shows the disagreement over the reliance to the lecturer improves by almost 59% in total. Likewise, the percentage of the learners who are uncertain whether or not that they should depend on their lecturer plummeted to 6.6%. On the other hand, the learners would still feel that they need assistance from their lecturer, especially when they encounter problems with their learning. This is understandable since learners should not totally by themselves when they face problems and they need to find solution by exposing it to others. This is reflected by 45.6% of the total learners who still think that they need some advice. Thus, it can be concluded that the learners are changing their perspective from being too dependent to their lecturer to become more self-regulated.

Learners' Perspective on Their Role after Treatment

Another aspect to be analyzed is whether or not learners are changing their perspective on their roles. This is important since during the preliminary, the majority of the students were not certain of their roles as an independent learner. Therefore, after Mondly was implemented, the questionnaire on their roles was administered one more time. Table 3 below illustrates the learners' perspective on their roles after the treatment.

TABLE 2 | Learners’ Perspective on Lecturers’ Role after Treatment

No	Statements	SD	D	U	A	SA
1	I believe the lecturer should make the total learning plan in General Vocabulary Class	11.4%	45.8%	2.9%	28.5%	11.4%
2	I want the lecturer is the only one to set the goal of the learning in general vocabulary class	5.7%	51.4%	11.4%	31.4%	-
3	The lecturer should choose the topic for me to explore in learning the vocabulary	17.1%	48.5%	5.7%	25.7%	-
4	I think my lecturer should always decide the material to be learnt in general vocabulary class	48.5%	20%	8.6%	20%	2.9%
5	My lecturer is the only one who knows my progress	17.1%	54.2%	8.6%	17.1%	2.9%
6	my lecturer must always give advice if I find problems	25.7%	25.7%	2.9%	31.4%	14.2%
7	I have fun in learning if the lecturer state the objective of learning	8.6%	45.7%	5.7%	20%	20%
8	I can keep learning if my lecturer always supervise me	20%	65.7%	2.9%	11.4%	-
9	I rely so much on lecturers to help my learning	11.4%	57.1%	11.4%	20%	-
10	I think when I complete the task from my lecturer, my job is finished	28.5%	51.4%	5.7%	14.2%	-
Mean Score		19.4%	46.55%	6.6%	22%	5.45%

TABLE 3 | Learners’ Perspective on Their Role after Treatment

No	Statements	SD	D	U	A	SA
1	I think I understand what I should do in General Vocabulary Class	-	14.2%	5.7%	25.7%	54.3%
2	I decide my own learning plan in general vocabulary class	11.4%	20%	8.5%	31.4%	28.6%
3	I set my target learning by myself in general vocabulary class	-	-	8.5%	85.7%	5.7%
4	I decide the topic to be explored in learning vocabulary	-	2.9%	11.4%	45.7%	40%
5	I always learn new vocabulary every day with my own method	-	14.2%	14.2%	37.1%	34.3%
6	I check my learning achievement by myself	-	14.2%	11.4%	48.6%	25.7%
7	I always ask friends or teachers if I do not understand some materials	2.9%	5.7%	5.7%	48.6%	37.1%
8	I believe it is me who should determine what I learn	5.7%	8.6%	5.7%	51.4%	28.6%
9	I think my task is to keep learning new vocabulary even my lecturer have not asked me to	2.9%	11.4%	2.9%	62.8%	17.1%
10	I think I am able to check my own progress	-	8.6%	17.1%	54.3%	20%
Mean Score		2.3%	10%	9.3%	49.2%	29.2%

As presented in [Table 3](#), there is a major change in learners’ perception on their roles in learning. This indicates how far learners have realized their primary task to be autonomous learners. The number declined from 52% in the preliminary study to 42.7%. This significance transformation designates the well awareness possessed by learners. From [Table 3](#), it can be seen that 78.4% in total agree that learners themselves should be able to set their own goals in learning, method of learning, progress checking, looking for support, and evaluating their achievement. Although the number of learners who disagree with their roles is not as significantly decreasing compared to other aspects, it remains considerably important for learners’ progress. It can also be concluded that learners have become more cognizant with their role to be autonomous learners. Since the data have provided a significant change on learners’ perspective on autonomous learning which also means the criteria of success has been fulfilled, thus the cycle of action research can be stopped.

These findings are supported by the result of the interview that reveal students started to be more autonomous. They disclose that the use of Mondly helps them to plan their vocabulary learning since they are given

various options of module in the app. This specialty of the app gives them a general picture of which material they should learn first, allowing them to choose a topic to explore further. This is in line with the findings from [Zulkepli et al. \(2018\)](#) who highlight that technology helps fostering learners’ autonomy to the extent that they are able to select materials from the provided options. This indicates that exposure to the range options are still needed.

[Umam \(2021\)](#) adds that fostering learning autonomy to the young generation with the use of technology is considered faster since they are accustomed to the exposure of technology in their daily interaction. In this regard, the role of the lecturer in classroom could be reduced gradually but not totally as they direct learners to be more autonomous. In short, the learners agree that teachers or lecturers could take less dominance when deciding the materials to be learnt.

Additionally, the findings also confirm that of [Djoub \(2016\)](#). He explains that MALL offered learners the opportunity to experience new ways of learning beyond the classroom context, increasing flexibility and giving learning opportunities in terms of context, mode of delivery, learning space and time, thereby increasing learning autonomy.

Mobile learning significantly motivated the learners and transformed the learning process as it helped learners to raise their self-esteem, self-confidence, and autonomy.

Furthermore, it is highly important for learners to be able to put efforts on checking their learning progress. The result of interview generally supports the findings from questionnaire on this matter. Learners reveal that they are happy because the apps is equipped with a comprehensive assessment system to help them check how far they have mastered certain vocabulary. In addition to the drawbacks of traditional assessment (Li, 2021), checking learning progress with the help of artificial intelligence powered apps is considered giving more supplementary yet comprehensible data and providing aids in learning efficiency (Sun et al., 2021).

Although Mondly is specially designed for elementary level vocabulary for foreign learners, participants in this study confidently state the daily challenges presented in the app motivate them to subconsciously learn more vocabulary every day compared to when the app was not used. It is known that the perspective of learners where they think they should keep learning even the lecturer does not assign them is derived from this condition. Some learners even emphasized their interest in learning by stating that even after the course, they would keep using the app to help them learning new vocabulary. This is probably due to a new version that is available after certain period of learning. As stated by Sejnowski (2020) deep learning program will also lead learners to have deep learning experience, the sophisticated performance of the app allows learners to continuously explore the app further and deeper. Also, artificial intelligence provides an opportunity for learners to learn adaptively since the app is regularly updated with new materials, module, and functionality (Orsi Koch Delgado et al., 2020).

With the aforementioned findings and discussion on how the artificial intelligence powered apps works on changing learners' perspective, it can be used as a milestone to foster their autonomy since having the perspective of the importance of autonomous learning is the major basis for it.

CONCLUSION

There are two major conclusions derived from this present study. First, incorporating artificial intelligence powered apps in general vocabulary learning has successfully changed learners' perspective on autonomous learning. It was implemented through action research model where the effect of the AI powered apps was observed after five steps of implementation. In results, there are two major indicators of autonomous learning that are used in this study namely students' perspective on lecturers' role and their own role. Second conclusion is that the use of AI powered app work positively in fostering learners' autonomy in learning vocabulary. The findings of this study also indicate that the use of AI powered apps suites the higher education context. Drawbacks might include the needs to provide lecturers or

teachers with autonomy to override recommendations in classroom situation as well as helping them to tackle issues raised during the implementation of an AI powered app in teaching certain subject.

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