# Integration of Mobile Application in a Flipped Classroom for Language Learning

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**Abstract**
The goal of the integration of mobile learning into a flipped classroom teaching is to offer a new way of language learning for students and reduce the teacher's role in the classroom. This new transformation from a conventional teaching and learning approach to heutagogy and paragogy approaches is to meet the criteria for a student-centered approach and to embrace the differences. This will also promote teachers' creativity in creating teaching and learning materials, "My Speaking App" is designed to match the purpose for personal use for the speaking skills practices in learning the second language (English) in a non-face-to-face environment. My Speaking App offers a variety of supports to enhance the success of Malaysian language learners in their English communication skills. My Speaking App delivers personal mentoring from the tutor and intervention strategies related to non-cognitive behavioral practices to ensure language learners are motivated. This mixed-mode research allows researchers to gather data qualitatively and quantitatively. Language learners responded to a survey after experiencing the flipped classroom learning with the use of the mobile app before they entered the language class for six months' duration. Analysis of results demonstrated that mobile application was effective in the flipped classroom in supporting students' lifelong learning, especially in language learning.


Keywords: Heutagogy, My Speaking App (MSA), Flipped classroom, Face-to-face (F2F), Non-face-to-face (NF2F)

**Introduction**

Language teaching and learning has been transformed from conventional practices to a more complicated interactive mode including cybergogy. Textbooks and other hardcopy reading materials are being replaced in small but compact digital devices such as smartphones. The storage in smartphones is easily accessible at any time and any place. Jeschke (2014) stated that the challenges of 4.0 education should be personalized, connectedness through social media, problem-solving, and crowdsourcing. The revolution of digital technology supported Mobile learning in 4.0 education that may attract the users to switch themselves from a conventional way of learning to their favorable style of learning, and this aligns with the needs of the 4th and 5th Industrial Revolution. To show that language teaching has always been dynamic and active, educators need to embrace the differences in the way they teach by creating and innovating sophisticated, creative, and interesting teaching and learning materials or applications. The most significant change, which educators need to consider in developing any teaching and learning app is for this Z generation and future Alpha generation who is a digital native. The differences made by the educator will also reflect the pedagogy growing trend among the world language teachers across the board.

The main concern in language teaching is that we want learners to use the language instead of learning about the language. In a common traditional F2F scenario, we need both speaker and listener present at the same time and place (Abu Bakar, 2017) to communicate. Is it possible for a teaching and learning session to be conducted in different contexts and at different times, without facing each other? How? Of course, it is possible because the learners are using the language through the integration of technology, by using their digital devices such as smartphones, and this could be the next alternative for virtual communication, a functional alternative to F2F communication (Flaherty, et. al.1998). This notion supports the use of the mobile application for speaking practices as NF2F communication channel as complements for one of F2F communication. Thus, the scope for this current research focusses on the speaking skill, which is considered as the most important language skill the learners need to master. The app MSA was designed and developed as a functional alternative to F2F communication while the 'Flipped classroom' approach was used as the intention to have 90% of student's engagement to use the language to communicate throughout the class period. The combination of non-face-to-face (NF2F) language learning (individual assignment were given before the next class via the use of 'My Speaking App') and face-to-face (F2F) group discussion in the class, as a regular practice, will result for better day-to-day communication among the language learners.

Life in a college or varsity are challenges when students are burdened with tons of assignments. This causes them a problem in finding a partner and time to use and practice the second language in a group discussion. Therefore, the current study is implemented to prove that technology can help them because there is limited research conducted in analyzing speaking practices through mobile apps. The use of the mobile app is still considered as a new way of practicing language skills. Practicing speaking skills will reduce communication apprehension (CA) or a person's level of anxiety among language learners. By using a mobile app to practice using the second

language as the NF2F medium of language learning will help language learners to reduce their anxiety level and increased their non-cognitive skills in the process of learning in other ways of class approach. Conducting a 'Flipped Classroom' for language class offers more time for language learners to practice using the language as they were assigned with the related task at home before they entered the class the next day. The lecturer's role has shifted in this approach from a knowledge owner to a facilitator, and the main actor is the students in the class. Students will have ample time to use the language and be more prepared to communicate F2F in the given time frame.

It is important to highlight a new way of language learning and to embrace the differences to the new generation because it eases them in many ways in this study. Flipping the classroom from conventional ways of practicing speaking skills conducted by most of the teachers give them a dull experience when they had familiarity with the technique used since they were in secondary school. It is about time to change the scenario to a new approach of learning as this nurtured their non-cognitive skills too in leading them to do better in their cognitive skills.

It is hoped that the findings of this study will contribute to 4.0 Education, whereby, specifically the use of the mobile application can be integrated into a 'Flipped Classroom' approach. Besides, it will also be an encouragement for an educator to design and develop their teaching and learning materials in a simple, fun, and creative way by using a mobile application. This study intends to answer these questions:
(1) How do students perceive their experiences in using the mobile application in a flipped classroom for speaking practices in learning the second language?
(2). How effective is the use of the mobile application in the flipped classroom language learning in supporting students' lifelong learning and non-cognitive skills?

**Literature Review**

The review presented below covers three important themes: student engagement in non-cognitive skills in language learning, flipped classroom approach, the potential of mobile learning attributes.

**Non-cognitive skills in language learning**

Language learning is a lifelong learning process that involves cognitive and non-cognitive skills in the whole process of learning. Students' cognitive skills are assessed through a series of English tests, while their non-cognitive ability is varied because the skills are developmental across a person's lifetime. Non-cognitive skills as representing the "patterns of thought, feelings and behavior" (Borghans et al. 2008) of individuals that may continue to develop throughout their lives, and that plays some roles in the education process. This situation can be seen when language learners experience a new way of language learning, especially in learning speaking skills by using mobile applications through the flipped classroom approach. Non-cognitive skills, which are relevant to the education process, include critical thinking skills, problem-solving skills, emotional health, social skills, work ethic, and community responsibility (Rothstein, Jacobsen, & Wilder, 2008). The aforementioned skills above exist in the process of language learning in a face-to-face (FTF) or even

in non-face-to-face (NFTF) communication via exercises provided in a mobile application, namely My Speaking App (MSA). The student-centered approach in Flipped Classrooms and the interactive platform embedded in the mobile apps allow close interaction among students and teachers. Through the use of lessons provided in the app, the skills can be nurtured implicitly and explicitly from the perspective of language learning, such traits as persistence and communication skills. Non-cognitive skills also reinforce cognitive skills, measured independently, yet interdependently (Gabrieli, Ansel, and Krachman 2015). Researchers found and adapted the non-cognitive skills suggested by Farrington et al. (2012) in the research framework because they are strongly associated with academic performance are academic behaviors (participating in the group discussion in a flipped classroom), academic perseverance (grit; student ask and answer at the earlier stage in the classroom), academic mindsets (student feels a sense of belonging when teacher coach them in the classroom), learning strategies (e.g. metacognitive strategies and goal-setting), and social skills ( interpersonal skills and cooperation; when learner collaborate to solve the problem and present the solution ). Jackson (2012) found that the presence of English teachers has important effects on non-cognitive skills while Ruzek et al. (2014) added that teachers influence their students' motivation, as measured by mastery and performance achievement goals while their influence varies in their ability to enhance students' non-cognitive skills although the effect sizes are smaller for non-cognitive than for cognitive skills (Araujo et al., 2016).

**Effectiveness of M-Learning for lifelong learning- Heutagogy, Paragogy and Collaboratively**

M-learning focusses both for personalized and collaborative learning depends on how it was conducted or used. As stated by Kulkuska, (2019), mobile language learning became one of the leading areas of research and development, and it became an everyday practice engagement for anyone who wishes to learn a new language or improve their language skills with the help of free apps and online resources. The effectiveness of M-Learning can be seen when mobile devices combine the affordances of social media tools which allow the user to create, communicate, and share content in their everyday life without any temporal limitations. This heutagogy approach amplifies the learner's ability to determine and direct their learning by choosing or creating an appropriate context for their learning (Narayan, Herrington, & Cochrane 2019). Hase and Kenyon, (2000) define heutagogy as a progression of pedagogy and andragogy, where the learner has the autonomy to determine and direct his learning path and process. Besides, Kamrozzaman, Badusah, and Wan Mohammad (2019) revealed that the heutagogy approach's element increased when it displays the highest mean and positive responses toward technology and the relationships are interconnected between sharing and connectivity elements. Thus, this support that M-Learning is effective in promoting the heutagogy elements among the language learner. Besides that, the element of paragogy was also highlighted when the learner's motivation increased when they were connected through mobile social media to the other learners. They also have better opportunities to do revision and practices, and it is easier for them to learn new vocabulary or dialogues through frequent repetition in the day (Kulkuska, 2019). However, in completing the task a learner might require assistance to get over an unpredicted hurdle, to enable them to progress in their learning or to reflect on their progress, a social platform Telegram, or

WhatsApp link are provided in the design and the development of MSA from the language tutor. Mobile phones are a convenient everyday means of summoning help in emergencies and getting in touch with people who can offer support, as well as a means to access specific resources (Kulkuska, 2019).Language learner lifelong learning will continue in the Flipped Classroom approach when the learner has the elements of heutagogy, paragogy, and collaboratively in their life.  There are many studies proved that Flipped Classroom Model helped students to be more responsible and independent in their learning process, particularly in communication (Lin & Hwang 2018), and Fisher et al. (2018) stated that flipped classroom had a significant contribution to learners' perceptions of learning satisfaction, engagement and less regarding their performance, while Yahya, Supyan, and Kemboja (2019) indicate that the application of FCM is an effective approach in the EFL speaking classroom in-class and out-of-class activities.  Therefore, in this current study researchers would like to investigate the integration of our mobile application designed in a flipped language classroom towards learners' non-cognitive skills and speaking performance in their lifelong learning.

**Methodology**

A study was conducted to find solutions to the problems that arise in enhancing the language learners' speaking performance, specifically for individual presentation and group discussion. MSA was developed to meet the aforementioned objectives. Students were exposed to the app for four months before they sat for the speaking assessment. They had their practices through the exercises provided in the app as it compiles the complete language learning package, MSA consists of speaking tips, tutorials, speaking simulation, and assessment. The users will also be guided by the tutor in enhancing their speaking performance through the Telegram App or WhatsApp attached to the app. The approach used in this study was a mixed-method, to collect both qualitative and quantitative data. A survey on user perception, including their experience in using the app and learning in a 'Flipped classroom', was conducted for quantitative analysis, among 58 engineering students. Additionally, a qualitative approach was used for the interview session among 5 respondents to gain an in-depth analysis of results to determine the design, contents, usage, and benefits of the app and scaffolding group discussion.

**Mobile Application: My Speaking App in a Flipped classroom**

Mobile gadgets have become a survival tool for learning. In fact, "Learning through mobile applications, increase student interest, achievement and motivation" (C-H Su & -H. Cheng, 2015). Hence, it is necessary to design and develop mobile learning applications for NF2F in learning English language skills to enhance students' communication skills. MSA is a complete language-learning package designed and developed for language learners based on Asian local context. MSA focuses on social expression usage and speaking practices. It is suitable for personal learning as language users can use it flexibly and at their own pace. The main goal of the app is to offer a new medium of NF2F the environment in learning and acquiring the speaking skills. In the app, language learners can record their answers or opinion and detect their mistakes when they listen to the recording again. This virtual speaking practice offers more personalized learning to the language learners and solved the problem of

finding a partner for F2F communication. It is hoped that by using MSA, language learners who will be presenting their thought or opinion, individually or in the group, will be familiar with various speaking contexts and topics. MSA will expose them to real-life situations whereby polite or correct expressions are used for apologizing, asking for clarifications, interruption, giving descriptions, etc. Another purpose is to provide the language learners adequate and interactive practice in using the language expression in delivering their opinion on the issue raised as personal learning. The app consists of individual and group speaking tips, grading criteria, lessons, practices, enrichment exercises, vocabulary banks, YouTube simulation of group discussion, and media social links such as WhatsApp and Telegram. Bloom's Taxonomy prescribed the level of practice difficulty in the app. Users can listen to an interactive audio simulation of the group discussion.

In a flipped-classroom approach, students are free to explore the app contents and choose the situation and types of a candidate they interested in such as Candidate A, B, C or D based on a group sitting of four members. They will go through the app content and have their practices before they enter the English class. They can record their own opinion of the task given in the app just by using the microphone icon provided in the app, personally at their own space and location. The app has a limitation in evaluating an opinion as it is very subjective for artificial design to be formulated, as different people have different opinions. The student will use the app to watch the group simulation by using the YouTube link provided in the app before they enter the class. Flipped classroom focuses on students centered when the teacher acts as a facilitator. First five minutes in the class they will have the Question & Answer session about their assigned task. This involved academic perseverance in non-cognitive skills; student's grit. The student's courageousness in questioning and answering the teacher is nurture in this session. The other 20 minutes of the class will be focusing on group discussion on the problem raised in the app. Next, a non-cognitive skill that nurtures through this activity is academic behavior is student's participation in the group discussion. The other activity that focuses on the student is a group presentation that allocates 30 minutes. This involves of non-cognitive social skills, where the student shows their interpersonal skill and cooperation in their group presentation. At this stage, they will be evaluated individually and in a group by the facilitator. While the presentation is ongoing, the facilitator will also act to coach students, who faced difficulty in language learning. By doing this, the student feels a sense of belonging in the language class, which fulfills the non-cognitive skill of mindset. Besides that, learners will also be scaffold by the language tutor through the WhatsApp /Telegram platforms when they use mobile apps (MSA), where they can get help and guides from the tutor to further improve their speaking skills.

Figure 1 below is the research 'Flipped Classroom' design, which portrays interaction of the system and the user or whoever uses the application and ways to use it in a flipped classroom. The MSA application is used as a tool for flipped classroom design, which offers learners to have their own personal and free learning before they enter the class.
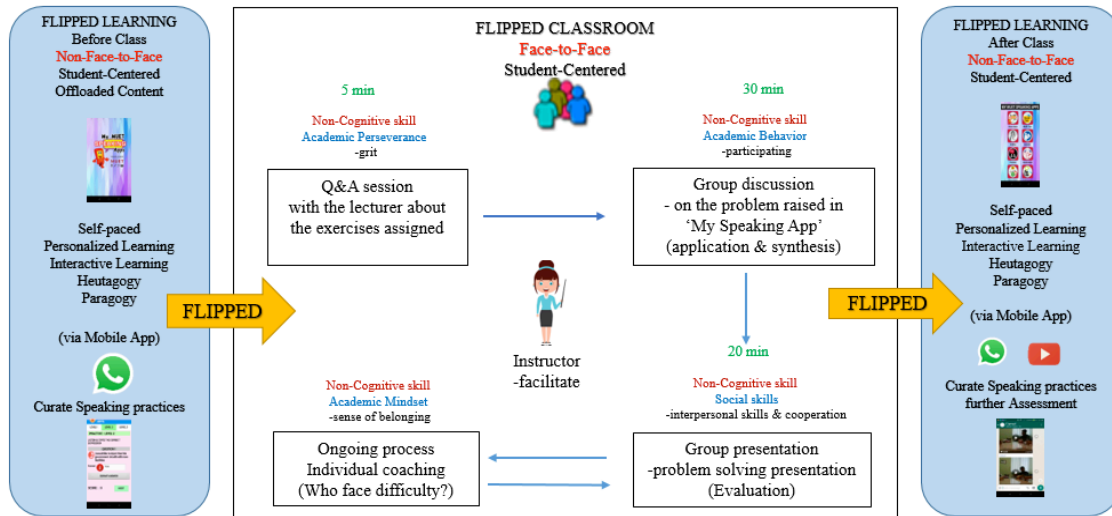
Figure 1: Flipped Classroom language learning design

## Results and Discussion

RQ1: How do students perceive their experiences in using the mobile application in a flipped classroom for speaking practices in learning the second language?

The answer to this question is about learner's perception of Flipped Classroom experience in using mobile applications (MSA). It evaluates the students' acceptance of the flipped instruction used in this study, with constructs, including motivation, relevance, engagement, and overall satisfaction. The results revealed that the learners' responses to all four constructs fell into the upper intermediate category, with the mean scores of 3.83 (motivation and engagement), 3.67 (relevancy), and 3.86 (overall satisfaction) respectively. Most of the learners' were satisfied with the flipped classroom experience, "I prefer the flipped classroom to a conventional tutorial-based classroom", had the highest mean score (3.91), and with 53 responded "strongly agree" and 5 responded, "agree". This is because they can practice using the language earlier with the app in a non-face-to-face environment before they face the real partner to communicate, which lessens their anxiety level compared to a conventional speaking class.

Table 1. Descriptive statistics of the perception of a flipped learning experience.

| Construct | SD | Mean | Min. | Max. | No. of Items |
|---|---|---|---|---|---|
| Motivation | 0.378 | 3.83 | 2 | 4 | 3 |
| Engagement | 0.378 | 3.83 | 2 | 4 | 4 |
| Relevancy | 0.469 | 3.67 | 1 | 4 | 4 |
| Satisfaction | 0.345 | 3.86 | 2 | 4 | 1 |

Note: *N=58*

The students' overall flipped classroom learning experiences were also been collected via semi-structured focus-group interviews. The interview comments were analyzed based on the themes, as related to their motivation, ease of use and enjoyment, time factors and grit in their learning, their level of nervousness in face-to-face communication versus non-face-to-face communication, and their perceptions of the

use of the mobile application in a flipped classroom. Researchers found that, in most cases, the students thought that the flipped instruction used in this study was a good way to learn English language expression and allow them to participate more. Though numerous online and interactive platforms have been exposed to the students such as google classroom, Pad-let, etc., which have provided the same functionality as required in a flipped classroom, they prefer to use mobile app. "I prefer to use MSA for the class and feel motivated to speak in English", said student K. "I feel more motivated than before." Student X commented that "I love to use my smartphone…is easy, it's just like having a compact book in it, I can use it at any time and place". While student F mentioned enjoying practicing speaking with the tutor, a virtual learning style. Student J felt that "Using MSA for speaking practices solve our problem to find partner or lecturer in having face-to-face communication and more interesting. I think a conventional tutorial-based class is boring and this is interesting. Using MSA helps us a lot because we can repeat the exercises". Few students commented that the MSA contents are quite limited, they suggested having some fun elements of the simple game such as word puzzle. Two students commented on the flipped classroom instruction required more time than a conventional class. However, most of the students accepted the given instruction, and time and workload are not burdening them. In case of low anxiety level among students, having this non-face-to-face speaking practices via using MSA, lessen their nervousness level when they face their classmates or lecturers. "It eases my nervous feeling while having face-to-face communication with others and I can express myself confidently by using the correct language expression", explanation of student X. They felt that the flipped classroom design made them less nervous because they had practiced themselves with the language before they entered the class. Besides, using a mobile application atmosphere for interaction with their college mates and lecturer, allow them to consider the comments and responses given without the feeling of pressure in making an immediate reply. They have their own space and time to provide a proper opinion by using a correct language expression in the correct situation. As mentioned by student Z, "I feel nervous about speaking in class, but MSA allows me to practice using the language expression for the speaking practices by recording my thought in a non-face-to face scenario before I enter into the class and have a face-to-face communication".

Now we move to the results, based on the data analysis, for RQ2.

RQ2: How effective is the use of the mobile application in the flipped classroom language learning in supporting students' lifelong learning and non-cognitive skills?

The mobile learning app is ubiquitous, whereby users can use it at any time and anywhere according to their preferences. It is effective to utilize their free and leisure time with their small size and specialties. The effectiveness of the app is measures through the participants' overall perception of MSA's usability such as ease of use, content, quality of the time used, functionality, and the influences of mobile application in the flipped classroom approach. Figure 2 below shows that, in terms of the aspect of students learning time, the effectiveness is 68.97%, respondents find MSA apps very effective whereas 18.97% of them find it effective. MSA becomes the most preferable learning tool when respondents feel more comfortable to use MSA compared to a reference book and other materials, now and for the future. In

terms of the aspect ease of use, the effectiveness is 77.6% of respondents find MSA apps very effective whereas 17.2 % of them find it effective, while 5.2 % of them find it somewhat effective. MSA eases respondents' day-to-day life when it is considered as a referral for them when they need helps in using the correct language expressions. This is because MSA offers them diverse learning strategies that promote them to engage in the practice, drill, training, and reading the notes from the tutorial sections in the app. Moreover, they think that the use of MSA in flipped classroom learning has guided them toward a better understanding of the course topics. In terms of app content, the effectiveness is 68.97% of respondents find MSA apps very effective whereas 20.69 % of them find it effective. The app was designed for a heutagogy (self-determined learning) approach where users can use the MSA as NF2F for speaking skills training because it was hard for them to find a partner for F2F practices. In terms of effectiveness, almost 75.86% of respondents find MSA apps very effective whereas 20.70 % of them find it effective, while 3.44 % of them find it somewhat effective. The respondent speaking performance was recorded before and after the app had been used in the implementation of a flipped classroom. Therefore, learners able to detect the improvement of their speaking skills performance to cater on the aspect of the functionality, the effectiveness of the MSA usage towards the language learning is almost 68.97% of respondents find MSA apps very effective whereas 17.2 % of them find it effective, while 5.2 % of them find it somewhat effective and 1.72% respondent was neutral. Overall, they think the use of MSA in a flipped classroom is more effective (74.14%) and an efficient way to learn for lifelong learning, whereas 22.41 % of them find it effective, while 3.44 % of them find it somewhat effective.
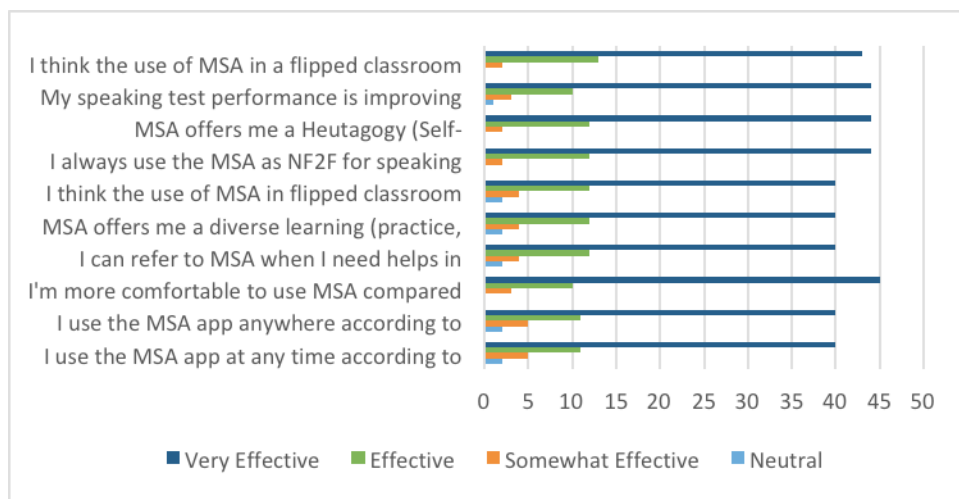


Figure 2: Respondent opinion about the effectiveness of mobile application in the flipped classroom language learning in supporting students' lifelong learning

Table 2 below, revealed the answer to the other part of MSA's effectiveness in the flipped classroom language learning in supporting or nurturing students' non-cognitive skills in language learning? There are four non-cognitive skills integrate into this current study as stated earlier. From the survey, researchers found that learners have more grit/courage to participate in Q & A session in a flipped classroom, in a learner's non-cognitive perseverance with the means score 3.70 and 0.529 s.d. Learners participated and engaged them-self more in a group discussion in the flipped classroom with the means score of 3.72 and 0.518 s.d. in learner's non-

cognitive behaviour. Learners also feel confident to share their opinion in front of the group members and others (means score of 3.71 and 0.526 s.d.), and they can cooperate with the other group members because they have the confidence to talk with the other group members after using the MSA (means a score of 3.72 and 0.518 s.d.) in learners' non-cognitive social skills. The last non-cognitive skills developed through this process of learning is the 'academic mindset' when they feel that the tutor/facilitator cares about them when he/she is available and respond online via Telegram/WhatsApp with the means score of 3.76 and 0.466 s.d.

| Items | Mean | STD |
|---|---|---|
| I feel that I have more grit/courage to participate in the Q & A session in a flipped classroom. | 3.71 | 0.526 |
| I DID NOT participate ACTIVELY in a group discussion in the flipped classroom | 1.79 | 0.405 |
| I feel confident to share my opinion in front of the group members and others. | 3.71 | 0.526 |
| I can cooperate with the other group members because I have the confidence to talk with them after using the MSA. | 3.72 | 0.518 |
| I feel that the tutor/facilitator cares about me when he/she is available and respond online via Telegram/WhatsApp. | 3.76 | 0.466 |

Table 2. Descriptive statistics of the use of the mobile application in the flipped classroom language learning supporting or nurturing students' non-cognitive skills in language learning

**Significance of the study**

It is hoped that the results obtained from this current study will help educators and language learners in identifying their own suitable and effective teaching and learning styles strategy to be applied in and out of the classroom in a face-to-face or non-face-to-face context. Next, the results from the study, exposed a heutagogy learning style in language learning so that learners will be ready for more futuristic styles of learning in the future. Through this current study, it is also highlighted the advantages of M-Learning; the use of the mobile application 'My Speaking App'(MSA) which was designed and developed purposely for NF2F speaking practices in a 'Flipped Classroom' which focussed on the students centered (F2F) in the language class. Finally, the great impact of the integration of mobile application as a learning tool in a Flipped Classroom could also nurture the language learners' non-cognitive skills such as academic perseverance, academic behaviour, social skills, and academic mind-set.

**Conclusion**

In conclusion, the research findings revealed that MSA is an effective teaching and learning tool in a 'Flipped Classroom', and has positive potentials to support student's lifelong learning and non-cognitive skills in language learning. Smartphones with its unique features of being a small size, the capacity of recording audio and video, etc. become the most popular tools for learning in leading to the era of the 4.0 Revolution. Practicing the speaking skills using the smartphone that complements the human beings' interaction with the integration of artificial intelligence, a cybergogy,

heutagogy, and paragogy creates a new scenario that shifts the conventional ways of language learning to a new transformation mode. Flipping a language class in Education 4.0 offers a virtual class without the presence of a lecturer, replacing language books or other hard copy materials; MSA offers offline usage, with its compatible learning package ease and motivated the language learners to learn the language. Additionally, the whole process of integrating the mobile application into the 'Flipped language classroom' nurtured the learners' non –cognitive skills in learning the language unconsciously. Hence, MSA is innovated and developed in a simplified way, informative with guidance and practices which support an interactive self-learning environment that eases the language users. It can be concluded that MSA could be the driver for 4.0 Education in Flipped language Classroom, as it caters to the influence factors of 4.0 Education elements.

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