

ICT-Based Interactive Game in TEYL: Teachers' Perception, Students' Motivation, and Achievement

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Abstract—Teaching English for young learners (TEYL) has been entering curriculum of EFL in many countries. Theories conceptualize that the earlier the learners are familiarized with the language, the better their acquisition will be. The main goal of TEYL is to give foundation of simple oral communication skills as the basis for further written communication skills. This research was a descriptive study which aimed to explain: (1) teachers' perception of the effectiveness of the program, and (2) the students' motivation and learning achievement after being taught with ICT-based interactive game. There were 30 primary school English teachers participated in this study and given a one day in-service teacher training program on the implementation of ICT-based interactive game, which was further followed with three mentoring sessions to six representative schools determined by random sampling of two clusters. The result shows that the teachers had a very good perception on the program, in which the training was considered to help them increase their knowledge and skills in preparing lesson plans and conducting teaching. Furthermore, the students had a high motivation in learning English by the facilitation of ICT-based interactive games and consequently they had a better learning achievement.

Keywords—ICT-Based Interactive Game, Learning Achievement, Motivation, Perception, TEYL

1 Introduction

Utilization of Information and Communication Technology (ICT) in supporting the development of education has penetrated into various things that support the learning process such as: e-learning, blended learning, and others. This is in line with the statement of Divayana, Suyasa, and Sugihartini which states that: "The existence of various learning models by using computers such as: e-learning, Computer Assisted Instruction (CAI), Computer Based Instruction (CBI), and e-teaching (electronic teaching) is possible to facilitate the development of education" [1]. Other things that can also take advantages of ICT in the field of education are in evaluating the implementation of the educational process. This is evidenced by some research results about the evaluation of education using ICT in the evaluation process: research conducted by Sanjaya and Divayana in 2015 [2]; Divayana in 2015 [3],[4]; Divayana and

Sugiharni in 2016 [5]; Divayana in 2016 [6]; Ariawan, Sanjaya, and Divayana in 2016 [7]; Jampel, Widiana, and Divayana in 2016 [8]; Ardana, Ariawan, and Divayana in 2017 [9]; Divayana in 2017 [10],[11],[12]; Divayana and Sanjaya in 2017 [13]; Divayana, Ardana, and Ariawan in 2017 [14]; Suandi, Putrayasa, and Divayana in 2017 [15]; Divayana, Adiarta, and Abadi in 2017 [16],[17],[18],[19]; Divayana, *et.al.* in 2017 [20],[21],[22],[23]; Arnyana, *et al.* in 2017 [24]; Jampel, *et al.* in 2017[25].

The success of ICT utilization in the field of education is inseparable from the progress of the platform and the completeness of media that has been in accordance with the characteristics and objectives of the learning process. The main factor as a determinant of the success of ICT-assisted learning process can be well done is the existence of learning media with an attractive and interactive appearance.

Media is one of the key successes in the teaching learning process. Especially in teaching young learners, it plays a very important role to enable teachers to handle their teaching and transferring of the material better. It refers to aids which are used during the process of learning in order to make communication and interaction more interesting [26], increase students' attention and concentration during learning and thus it can bring an effective learning and directly affect learning achievement [26],[27]. There are many different types of media which can be applied by teachers in the classroom based on the relevance of the material taught and levels of students, starting from the conventional ones, such as chalk boards, white boards, pictures, flash cards to the more modern ones which use technology such as, radios, videos[28] and even more recently involving the integration of technology which also influences teaching business [29],[30]. In the latest curriculum in Indonesia, known as curriculum 2013, the government stipulates that all courses should ideally integrate the use of technology to innovate the teaching and learning process. This is due to the facts that all parts of the community locally, nationally, even globally have recognized its various roles in updating the teaching and learning process. The use of technology is as a prerequisite of modernization in education system and learning methods [31], it is a powerful tool for educational change and reform [32], it provides better resources and access of information, fosters cooperative learning, and makes complex learning experiences becoming easier [31]. Its use in teaching and learning process does not only make the lesson more effective and efficient, but also more interesting, challenging, and stimulating students' creativity [33].

Especially in teaching the language for young learners, the integration of ICT involving audio and video will help them in practicing the oral language [34]. Moreover, some benefits gained from technology integration for teaching young learners are (1) motivating and making them produce positive attitude toward learning; (2) establishing a meaningful context for communicative activities and engaging them in authentic and realistic experiences that add excitement to the learning process, and (3) the use of various combinations of text, pictures, and sounds offered by an assortment of technology can be used to improve receptive language skills, inspire classroom discussions, elicit target language from individual learners, and stimulate different learning styles while engaging the learners [35]. Additionally, it can increase not only conceptual and perceptual skills and introduce foreign language cultural content [31].

Hence, it can best be employed to improve the efficiency and effectiveness of education at all levels in general and in language teaching in particular.

Previous studies on incorporating ICT have proven that it does not only increase motivation, but also engages the students in language learning. ICT has also been agreed to be able to bring new atmosphere of learning, such as more interesting, challenging, and making the students more creative in their learning, which can improve the quality and effectiveness of foreign language teaching, both receptive and productive skills (Mullamaa [36]; Gleason [37]; Sucaromana [38]; Yunus and Suliman [39]; Chen, Zhang, and Liu [40]).

The use of games in foreign language learning has been under consideration for a long time. It plays important roles in a number of teaching approaches used in various countries [41]. Games known as activities which make the students especially young learners play while learning are regarded as powerful tools to help them learn better in a fun way. The existence and involvement of plays for those lower levels students are seen very appropriate as they are parts of children's world. They can give accurate stimulations for the children to develop their competence and skills in fun ways [42]. Game is a kind of plays, which has rules, a goal, and element of fun [43]. The element of fun is not only able to create a relaxed and pleasant learning atmosphere in the classroom, but also promote learning [44]. Game is one of the best ways to make children immerse in depth learning, effective energizer and educational tool providing enjoyment, and passionate involvement which promotes motivation [45],[27]. Game is an integral part of a balanced curriculum which contributes to children cognitive, psychomotor, and affective development [46]. Carefully selected games are useful learning strategies as they can encourage the learners to practice all language skills and types of communication as well as to build cooperation among them [47].

Studies on the use of games have been conducted by several experts. Games has been proven can motivate even quiet or introvert students to interact with other students and get involved in the teaching and learning process and further affect their listening comprehension [48]. It is also verified that games create opportunities for children to develop their linguistic skills [49]. Specifically considering the use of games in combination with technology, computer games which becomes the contemporary culture of today's youths is proven to be able to increase students' knowledge and skills that they had never learned before [50]. Other studies also demonstrate that ICT brings positive effects towards students' learning motivation [51] and language mastery [52]. Furthermore, it gives significant effect to both learning motivation and achievement [53] and generates students' positive perception on its usage [54].

This study is focused on giving in-service teacher training and mentoring on the use of learning media utilizing the integration of ICT in the games developed prior to its implementation, which is able to make the students to interact directly with the teachers, other students in playing the games, and also the games as they provide the students with the responses anytime they give the answers [55]. Henceforth, they are called ICT-based interactive games. The training covered how to operate the media, how to make lesson plans considering the media, and how to teach using the media. This study was conducted to help the teachers innovate their teaching strategies and make variation in their use of learning media. Therefore, it can maximize the teaching

learning process. They should be persuaded and strengthened to be more competent in operating the media and advancing the content of English taught. Melone [56], in this case, points out that when a person is merely using a system because he is required to do so, the benefits will be diminished and will not be in the best interest of all concerned. Thus, workshops should not only concentrate on imparting skills, but also make efforts to convince the teachers of the merits of using ICT in the classroom. Furthermore, they have to be properly exposed towards ICT in becoming confident and willing users of the technology [57]. The duration of exposure of teachers to ICT is crucial in alleviating the skills and anxiety level. Short term exposure to technology would be inadequate in equipping teachers with the necessary skills and knowledge for confident and masterful use of ICT in the classroom [58], [59].

Thus, the purposes of this research are two folded. First is to analyze the teachers' perception on the effectiveness of the in-service teacher training program combined with the direct visits of classroom observation and mentoring. Second is to examine the students' motivation and learning achievement.

2 Method

This research was a descriptive qualitative research which evaluated the perception of the teachers on the use of ICT-based interactive games in teaching English for young learners, students' motivation and learning achievement. The subjects of the study were 30 primary school teachers who were in charge of giving English instruction to students of grade 4 until 6 age from 9 to 13 years. They participated in an in-service teacher training program in the form of workshop on the use of ICT for a one-day session of 8 hours which was further continued with direct visits and mentoring to the schools represented by 6 teachers. Each of the 6 teachers was observed three times of a total of 70 minutes teaching time per session. Every time they finished teaching, it was continued with tutorial and mentoring. Afterwards, the students taught by these six teachers were given the questionnaire of motivation and test of English based on the materials taught by their teachers. There were 150 students of two different clusters comprising the fourth, fifth, and sixth grades of 6 primary schools in Sukasada District, North Bali.

The collected data from the questionnaire of the teachers' perception and the students' motivation were analyzed by calculating its percentage, while the test was analyzed by measuring its mean score achieved which was further converted into a qualitative judgment.

3 Results and Discussion

3.1 Results

The description of teachers' perception on the effectiveness of in-service teacher training program can be shown in Table 1.

Taking into account table 2, the result of questionnaire proved that the teachers had very good perception on the effectiveness of the in-service teacher training program on the use of ICT-based interactive games. Seen specifically from each evaluated aspect, the percentage is 94% in terms of knowledge improvement, 93% in terms of increase skill in planning the lesson, and 92% in terms of conducting teaching. It can be summarized that the in-service teacher training program was evaluated effective to help teachers increasing not only their knowledge of using technology in teaching English, but also their skill in planning the lesson and teaching implementation. Besides the use of questionnaire, data from three-time visits on classroom observation proved that there was an improvement of the teachers in their lesson planning and teaching as seen from table 3.

Table 1. Teachers' Perception on the Effectiveness of In-Service Teacher Training Program

Aspects Evaluated	Score Achieved	Percentage
Increase of knowledge on the use of ICT	704	94
Increase of skill in lesson planning on the use of ICT	694	93
Increase of teaching skills on implementing ICT	691	92
N= 30 Item= 5 Options (Likert Scale)= 5 Total score=750 Score= Total score/maximum score achieved x 100%		

Table 2. Criteria of Effectiveness

No	Score	Effectiveness
1.	85-100	Very Good
2.	70-84	Good
3.	55-69	Moderate
4.	40-54	Less Good
5.	0-39	Not Good

Table 3. Teachers' Skill in Designing Lesson Plans

Cluster 1					Cluster 2				
Session	Name of Primary Schools				Session	Name of Primary Schools			
	SDN 1 Sukasada	SDN 3 Sukasada	SDN 5 Sukasada	Mean		SDN 3 Sambangan	SDN 1 Panji	SDN 2 Panji	Mean
I	71.7	80.6	77.8	76.67	I	83.3	91.7	84.4	86.48
II	82.8	77.8	84.4	81.67	II	84.4	92.2	77.8	84.81
III	85.6	90.0	97.2	90.93	III	91.7	92.8	81.7	88.70
Mean Score				83.09	Mean Score				86.67
Grand Mean Score From Both Cluster = 84.88									

Table 3 shows the gradual improvement of 6 teachers within 3 weeks after being given the in-service teacher training program and mentoring to their schools. Their lesson plans were evaluated by two experts in English educations. The results prove that in the first and second session, the teachers' skill in planning the lesson in cluster

1 is classified as good while the third session becomes very good, while in cluster 2, the teachers' skill in lesson planning is classified as very good in all three sessions. The description of students' motivation can be shown in Table 4.

Table 4 shows that the students in 6 primary schools with the total number 150 students, who were taught by using ICT-based interactive games, indicated that they had very good motivation to study English.

The description of students' learning achievement can be shown in Table 5.

Table 4. Students' Motivation

Cluster 1			Cluster 2		
<i>N</i>	<i>Score Achieved</i>	<i>Percentage</i>	<i>N</i>	<i>Score Achieved</i>	<i>Percentage</i>
63	3483	92.14	87	4911	94.08
Item= 12 Options (Likert Scale)= 5 Total score=3780 $Score = \frac{Total\ Score}{Maximum\ Score\ Achieved} * 100\%$			Item= 12 Options (Likert Scale)= 5 Total score=5220 $Score = \frac{Total\ Score}{Maximum\ Score\ Achieved} * 100\%$		

Table 5. Students' Learning Achievement

	Cluster 1						Cluster 2					
	<i>SDN 1 Sukasada</i> <i>N=22</i>		<i>SDN 3 Sukasada</i> <i>N=33</i>		<i>SDN 5 Sukasada</i> <i>N=9</i>		<i>SDN 1 Panji</i> <i>N=35</i>		<i>SDN 2 Panji</i> <i>N=26</i>		<i>SDN 5 Sambangan</i> <i>N=24</i>	
	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>
Score	1,640	1,865	1,730	2,040	601	685	2,323.5	2,871	1,698.5	2,085	1,661	2,045
Mean	74.55	84.77	55.81	65.81	66.78	76.11	66.39	82.03	65.33	80.19	66.44	81.80
Mean of Pre-Test	65.71						66.05					
Mean of Post-Test	75.56						81.34					

Table 5 shows that being taught with ICT-based interactive games, the data revealed that the students in 6 schools could improve their English learning achievement. It can be seen from the results of pre-test compared with post-test. From the pre-test in both clusters the scores gained are 65.71 and 66.05 categorized under moderate level, while the scores obtained in the post-test are 75.56 and 81.34 classified good.

The incorporation of ICT in teaching and learning especially in vocabulary building was conducted through a discovery-based learning in which the students learned in groups to find out new vocabulary while playing the ICT-based interactive game. The game which visualizes the words they learn helps the students to recognize and remember vocabulary, thus put it in their long-term memory. As a result ICT-based interactive games could effectively promote the students' motivation which further improves their learning achievement.

3.2 Discussion

The result of the questionnaire prove that the teachers have a very good perception on the effectiveness of the in-service teacher training program on the use of ICT-based interactive games in teaching English to young learners in the primary schools. During the training they were refreshed with the theoretical and practical perspectives on the nature and roles of media in teaching young learners, the ICT-based media, the use of games, the use of ICT-based interactive games, examples of ICT-based games and how to operate them, samples of lesson plans incorporating ICT-based interactive games, sample of teaching simulation, and group work teaching simulations. The teachers believed that they could increase their knowledge on how to use technology in teaching which could help them updating and innovating their media of teaching. This change is also perceived to be able to make their students pay more attention, more motivated, and get involved in the process of learning. Their improvement in the knowledge is also considered to enhance their skill in planning the lessons and performing teaching. This finding is in agreement with the previous research studied by Ratminingsih, Budasi, and Mahayanti in 2016 [60], that eventually the in-service teacher training is perceived beneficial by the teachers in perking up their knowledge and skill in using media such as board games in enhancing primary school students' learning of English. This finding is reasonable since after the training, they were also mentored by the tutor who visited them in their schools regularly for 3 weeks. Their lesson plan was given inputs and comments where to revise and they were then observed in their teaching to find out whether or not they were able to conduct teaching which was compatible with their plan. From the mentoring activity, they were more confident to implement the ICT-based media in teaching. This supports Albion and Ertmer [59], Kent and Facer [57], and Nair, *et al.* [58] that a proper training makes the teachers become more confident and willing to use ICT media to teach.

Teachers also believe on the power of media, in this case ICT-based interactive game, which is proven to have a central and powerful role in making the teaching learning process more successful. Bringing the new things into the classroom has been able to make the students pay more attention, get involved and feel fun to study. The media is a prevailing tool to create a meaningful context which can improve desire and build new interest, increase motivation in learning, and even bring psychological effect to students [61]. Appropriate media can bring effective and efficient education at all levels. The use of ICT in this case could help the teachers to be more updated with their teaching. Making innovation during teaching is compulsory in order to help both teachers and students to feel fun in their activity. Teachers will find teaching more enjoyable, while students will find their learning more interesting and motivating them to get immersed and involved, so that learning is maximized (Gordon [35]; Kirubahar, Subashini, and Santhi [32]; Mahmoud and Tanni [27]; Pambudi [33]; Pim [34]. Therefore, it is proven to be able to improve the students' learning achievement and motivation to study (Davis [30]; Dedja [31]; Ratminingsih [62]; Puspitadewi, Ratminingsih, and Santosa [53]). It is not only improving the efficiency and effectiveness of education, but also a more interesting, and challenging lesson

which is able to stimulate students' creativity and increase learner autonomy [63], [64].

The result of the questionnaire to the students also conveyed their opinions which assessed three main issues, namely interest/enjoyment, spirit/force, and easiness/progress in learning. The finding shows that ICT-based interactive games could increase their interest and enjoyment in studying English. This can also be seen from the result of classroom observation during the lesson that they students were cheerful and full of spirits trying to interact with friends and the media in order to provide correct responses while playing the games. They were full of enthusiasm to compete with the other groups. Being able to provide correct answers of the games, they expressed their cheerfulness with applauses, smiles and laughter. This finding is in agreement with the previous researchers' findings Huyen and Nga [44]; Chenoweth, Ushida, and Murday [51]; Gordon [35]; Mullamaa [36]; Mahmoud and Tanni [27]; Pambudi [33]; Gleason [37]; Sucaromana [38]; Chen, Zhang, and Liu [40]; Yunus and Suliman [39]; Akcay, Butuner, and Arikan [49]; Ratminingsih [48],[62]; Ratminingsih, Budasi, and Mahayanti [60]; Puspitadewi, Ratminingsih, and Santosa [53]; Purnami, Ratminingsih, and Suputra [54] that ICT in the form of games gives positive effect to build up students' interest and motivation in order to make them keep concentrated and get involved during learning, which could later guide them to get easier to understand the lessons.

This finding reinforces previous studies which prove that the media used in the teaching and learning process can bring students learn faster and easier to understand the lessons and more productive to achieve the targeted goal (Ramendra and Ratminingsih [28]; Shin [65]; Ratminingsih [62]; Ratminingsih, Budasi, and Mahayanti [60]; Ratminingsih and Mahadewi [55]). Specifically, the media in the form of computer games was proven to increase students' language mastery and skills either receptive or productive Stepp-Greany [52]; Gordon [35]; Mullamaa [36]; Ali, *et al.* [50]; Gleason [37]; Sucaromana [38]; Yunus and Suliman [39]; Chen, Zhang, and Liu [40]; Dedja [31]; Akcay, Butuner, and Arikan [49]).

It can be restated that the ICT-based interactive games which are designed for young learners do not only make the students to learn while playing, they also present the important language features, such as vocabulary, sentences, grammar concept and spelling which are crucial to be introduced contextually to beginner learners. Many experts have proven the importance of inserting plays in the children process of learning in general and in learning ESL and EFL in particular. Feez [66] emphasizes they are the foundation of children' learning, the integral part of a balance curriculum, which contributes to their cognitive, effective, and psychomotor development [46]. Thus, they are ones of the best strategies to make children immersed in their learning [45].

Hence, it can be concluded that there are two main aspects reached by using ICT-based interactive games. First, they can help students develop their cognitive ability. Through games they can master the language easier, such as vocabulary, sentences, grammar and spelling which are presented contextually either receptively and productively. Second, they can also facilitate students to develop non-cognitive skills, especially through creating fun learning atmosphere, they can learn cooperatively with

their friends in an interesting, happy, cheerful, and motivating situation which helps them make faster progress in their study. The two folded advantages of these kinds of games, thus, can assist young learners to develop holistically.

4 Conclusion

The advancement of technology in this modern era brings changes in all levels of lives including education sector. Teachers should make their teaching relevant to the current situation if they do not want to be left behind. Considering this, they should be assisted in their endeavour to make innovation in their teaching especially TEYL. Media is very crucial for teaching young learners which are still under concrete operational developmental stage. The result of research proves that the teachers perceived the training to be effective in enriching their knowledge about the use of technology in teaching, and enhancing their skills in designing lesson plans and conducting teaching by implementing ICT-based interactive games. Teachers' progress further causes changes in the students' motivation and learning achievement. They perceive learning English using ICT-based interactive games can grow students' interest, spirit, and enthusiasm of learning, henceforth it affects their learning achievement which is becoming higher compared to before being taught by ICT-based interactive media. Therefore, its integration in teaching learning process for young learners is strongly recommended whether it is used with teacher's guidance in the classroom or as a self-accelerated learning outside the classroom.

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6 References

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