



Research of Flipped Classroom based on Students' Perceptions

İbrahim Yasar Kazu¹  
Cemre Kurtoğlu² 



(✉ Corresponding Author)

¹Firat University Education Faculty, Department of Education Science, Elazığ, Turkey.

Email: iykazu@firat.edu.tr Tel: +905303290996

²Ministry of Education, English Teacher Elazığ, Turkey.

Email: cemrekurtoglu@hotmail.com Tel: +905310211036

Abstract

Research of flipped classroom can be carried out in such dimensions as teacher, school manager, parents and students. This present research is aimed to investigate the secondary school students' flipped classroom readiness. The survey method was applied in this descriptive study. 'A Scale for Flipped Classroom Readiness of Secondary School Students' was applied as developed by Hao and adapted by Durak. The scale was applied to 383 5th grade and 362 8th grade totally 745 students studying at five different secondary schools which were chosen randomly from city center of Elazığ. Obtained data were analysed using SPSS Program Version 22.0. Their readiness for flipped classroom learning was investigated in five sub dimensions: 'self-directed learning, technology self-efficacy, in-class communication self-efficacy, motivation for learning and doing preview'. Their flipped classroom readiness was found positive in general. Students who have a computer and those who perceive themselves competent at using technological devices have more positive opinions on the flipped classroom.

Keywords: Doing preview, Educational technology, Flipped classroom, Motivation for learning, Self-directed learning, Technology self-efficacy.

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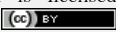
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Contents

1. Introduction	506
2. Literature Review	506
3. Research Design and Methodology	507
4. Findings	508
5. Discussion and Conclusion	511
References	512

Contribution of this paper to the literature

Nowadays, our world is under the influence of a pandemic, Covid-19 virus. In order to reduce the spread of the Covid-19 virus, the widespread closures of schools become inevitable. Technology plays an important role in the continuation of education during an epidemic. This research was carried out to investigate students' readiness of flipped classroom, one of the technology based models. It is estimated to be useful for future studies.

1. Introduction

Recent developments in information and communications technology continue to impact every aspect of society, along with significant implications for the field of education. New technologies are being readily applied to design and facilitate the educational activities required in today's student-centered learning environments (Rafiola, Setyosari, Radjah, & Ramli, 2020).

Especially, nowadays our world is under the influence of an epidemic, Covid-19. The coronavirus disease (COVID-19) causes closure of schools; beside that, face to face education has been interrupted and distance learning through computer and internet has become popular. Personal computing and communications devices have become important tools for learning and information transfer, and are thought as welcome additions to the learning environment. That's why, benefiting from information and communication technologies in education has become inevitable. In this way, the teaching and learning process can become more efficient and qualified individuals may be raised. Improvements in internet accessibility and speed have extended the global reach of education on an unprecedented scale across all levels from pre-school to post graduate studies. Learners with hand held devices and 24/7 internet access are no longer constrained to school hours. Indeed, such students are able to reach the information they need wherever and whenever they want. However, the many benefits of such advances have been seen to be slowed by the teaching profession itself. With the onset of constructivism in education in 2005, it was argued that certain traditional aspects should be retained to enable a 'behaviourist approach' (Anilan, 2014; Güven, 2010). Today we know that teachers' attitude and practices which limit the use of technology in the classroom can impede student-centered learning (Bolat, 2016). Efforts to counter these obstacles have in turn led to the popularization of radical concepts such as the flipped classroom (Filiz & Kurt, 2015; Torun & Dargut, 2015). The flipped classroom is centered on the idea that to attain success in education, the learning environment must be rearranged according to students' needs. Indeed, most education systems now emphasize student-centered learning, value individual differences, and call for the curriculum to be prepared accordingly. The main goal is to understand individuals' needs and to actively include them in all educational activities.

This flipped classroom research is based on investigating the flipped classroom readiness of secondary school students and determining whether they have necessary competences such as self-directed learning, technology self efficacy, in-class communication self-efficacy, motivation for learning and doing preview, or not. The researchers compared their readiness in terms of various variables (gender, grade, school where they study, having access to a computer, internet access, frequency of internet usage, the aim of using technological devices, how they perceive themselves using technological devices) across five sub-dimensions.

2. Literature Review

2.1. What is a Flipped Classroom?

21st century education systems emphasize the increasing importance of student-centred learning settings where students take part in tasks and direct their own learning (Hannafin, Hill, & Land, 1997; Shea et al., 2012). In student-centered learning setting, students are required to participate in the learning actively. Student involvement needs to be organized through such educational activities as discussions, problem solving and peer learning (Zappe, Leicht, Messner, Litzinger, & Lee, 2009). These activities are not straightforward and teachers can experience difficulties with time management and distributing the time devoted to lectures and active learning strategies evenly (Strayer, 2012). This kind of classroom, known also as 'inverted classroom' or 'reversed instruction', refers to a model that aims at coping with such challenges. Put forward by Bergmann and Sams (2012) flipped classroom was developed for those unable to take regular classes. This approach provides students with flexibility in their learning and thus they are given freedom to choose what they have learnt from a large number of resources and to direct their learning at their own pace. Students could watch video lectures before class and they were expected to prepare themselves accordingly. In this way what they were learning was reinforced with metacognitive activities such as group discussions, station technique, jigsaw, etc. during class (Bergmann, Overmyer, & Wilie, 2012; Davies, Dean, & Ball, 2013; Fulton, 2012; Hughes, 2012). As acquisition of subject knowledge is mainly undertaken out of class, flipped classroom allows teachers more time to apply active learning strategies. Moreover, this way of learning is regarded as beneficial for students since it allows them to learn at their own pace online. This approach provide students with a set of circumstances to turn into more active and interactive learners instead of passive listeners of the teachers and lectures (Mohanty & Parida, 2016).

Flipped classroom comprises in-class learning and out of class learning activities as seen in Figure 1. Interactive group and individual based learning activities are done in class while out of class activities include computer based individual learning strategies (Bishop & Verleger, 2013). In order to implement this model successfully, learners are expected to study the lecture through repetition. In this context, flipped classroom can be described as a learning process that is student centered, far from the traditional classroom understanding, based on active learning strategies, in which computer and internet software are used actively.

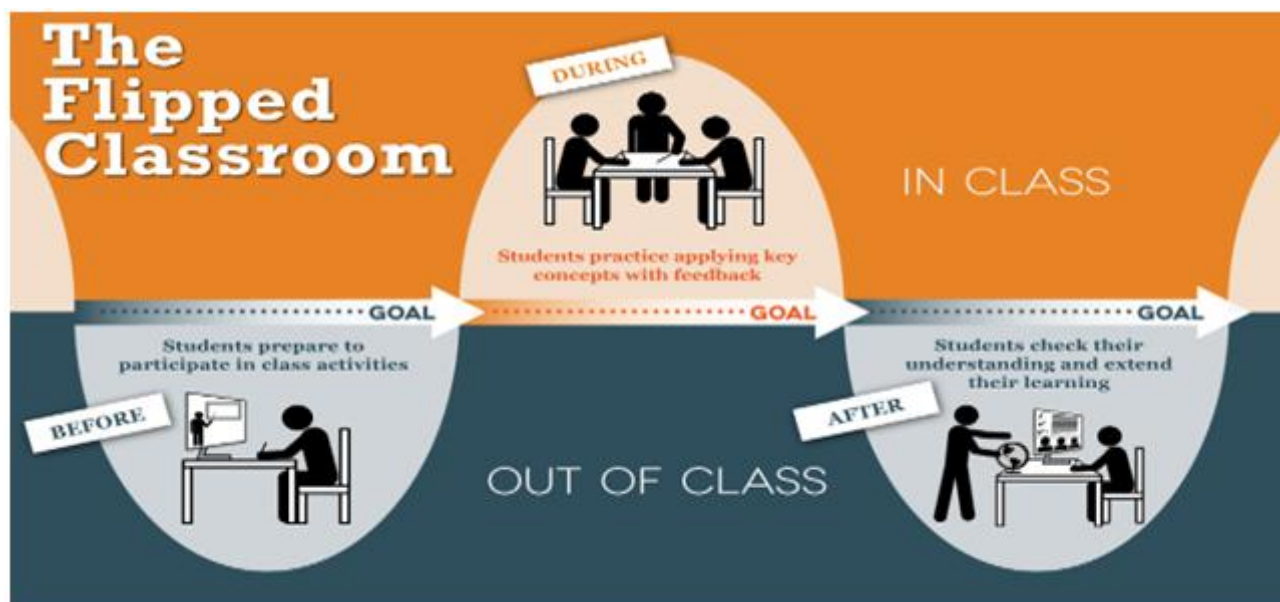


Figure-1. Flipped classroom model.

Source: (Faculty of Innovation Center, 2016).

3. Research Design and Methodology

3.1. Research Model

This study investigates the flipped classroom readiness of secondary school students. As it presents existing circumstances, a descriptive survey model is used to describe a previous or ongoing circumstance.

3.2. Sample Group

Table 1 summarizes demographic information about the students.

Table-1. Demographic information of students.

Categories	Variables	Number of Respondents	Percentage
Gender	Female	396	53.2
	Male	349	46.8
Secondary School	Mustafa Kemal	153	20.5
	Şehit Önder Pınar	137	18.4
	Cumhuriyet	187	25.1
	Bahçelievler	171	23.0
	Avukat İbrahim Gök	97	13.0
Level	5 th grade	383	51.4
	8 th grade	362	48.6
	Total	745	100.0

A total of 745 students from five different secondary schools in Elazığ were enrolled in the study which was conducted in 2018-2019 academic year. 383 5th graders and 362 8th graders, totally 745 students, were recruited by simple random sampling in five schools.

Table-2. Students' technology usage.

Categories	Variables	Number of Respondents	Percentage
Do you have a computer?	Yes	423	56.8
	No	322	43.2
Do you have an Internet access?	Yes	478	64.2
	No	267	35.8
How often do you use the Internet in a day?	Less than 1 hour	356	47.8
	1-3 hours	297	39.9
	4-6 hours	55	7.4
	More than 6 hours	37	5.0
Why do you use the Internet most?	Social media	186	25.0
	Entertainment	341	45.8
	Study	343	53.0
How do you perceive yourself to use the technological devices?	Enough	387	51.9
	Middle	291	39.1
	Insufficient	67	9.0
	Total	745	100.0

3.2.1. Students' Technology Usage

In this section, information about students' technology usage is explained. As shown in the Table 2, 56.8% of the participants have access to a computer and 64.2% of them have internet access. In addition, 47.8% of them use the internet less than one hour, 39.9% of them between 1-3 hours, 7.4% of them between 4-6 hours and 5.0% of them more than 6 hours in a day. 25.0% of the participants use the internet mostly for social media, 45.8% for entertainment (playing games, listening to music, etc.), 53.0% for studying, 51.9% perceive themselves as having enough expertise to use technological devices, 39.1% express themselves as middle while 9.0% express having insufficient expertise.

3.3. Data Collection Tool

A Scale for Flipped Classroom Readiness of Secondary School Students' developed by Hao (2016) and adapted to Turkish by Durak (2017) was used for data collection. The scale consists of a total of 26 items and 5 sub-dimensions, namely self-directed learning, technology self-efficacy, in-class communication self-efficacy, motivation for learning and doing preview. The scale is a 5-point Likert Scale graduated from strongly disagree (1) to strongly agree (5). Factor analysis has been performed and a Cronbach's Alpha Score of 0.864 obtained. Cronbach's Alpha Scores for the sub dimensions are 0.942, 0.956, 0.897, 0.820, 0.705 respectively.

3.4. Data Analysis

Data were analyzed using SPSS Program Version 22.0. In order to analyze demographic data, descriptive statistical methods such as percentage, arithmetic mean, and standard deviation were used. Moreover, to evaluate the data according to the variables, Shapiro Wilk test and Kolmogorov Smirnov were performed and homogeneity of variances tested. According to the results, since the distribution is not normal ($p < 0.05$), Mann Whitney U test and Kruskal Wallis test were used. In addition, to determine which group causes difference, Post hoc tests were used.

4. Findings

Findings are given as to whether the sub-dimension scores of the students that took part in sample group differed significantly from defined variables. The findings obtained by research are presented in the tables below.

Table-3. Students' beliefs about their flipped classroom readiness.

Sub dimensions	N	Mean	Sd
Self-directed learning	745	3.83	.61366
Technology self-efficacy	745	3.61	.77348
In-class communication self-efficacy	745	4.00	.92367
Doing previews	745	3.86	.95866
Motivation for learning	745	4.04	.87489
Flipped classroom	745	3.87	.60237

The results of the analysis confirm that students 'strongly agree' with having the qualities flipped classroom requires ($M=3.86$). In the light of the data, it can be said that students are highly skilled at five sub-dimensions. As shown in Table 3, students 'strongly agree' with having self-directed learning skill ($M=3.83$), technology self-efficacy ($M=3.61$), in-class communication self-efficacy ($M=4.00$), motivation for learning ($M=4.04$), doing previews ($M=3.87$). Accordingly, the flipped classroom readiness of secondary school students is positive in general.

MWU test results performed to determine whether sub-dimension scores show difference between genders show a statistical difference between the scores of self-directed learning, doing previews and motivation for learning in favour of females; and between the scores of technology self-efficacy in favour of males. Males were more confident of their technology self-efficacy than females, while greater motivation for learning was indicated by females. No statistical difference was found between gender for flipped classroom readiness. It is understood that the variable of gender has no significant effect on flipped classroom readiness in general.

According to KWH test results indicate whether sub-dimension scores show difference between schools, a statistical difference was found between the scores for self-directed learning, doing previews and motivation for learning and flipped classroom in favour of students at Mustafa Kemal Secondary School and Bahçelievler Secondary School. Students at these schools indicated greater flipped classroom readiness in comparison to others. In terms of technology self-efficacy, students from Cumhuriyet Secondary School and Bahçelievler Secondary School obtained higher scores than the others.

MWU test results indicate whether sub-dimension scores show difference between student grade show that a statistical difference was found between the scores for self-directed learning, doing previews and flipped classroom in favour of 5th grade students; while the scores for technology self-efficacy were in favour of 8th grade students. In the light of these findings, it can be stated that younger students are at higher level of flipped classroom readiness in comparison to older students. Older students indicated they were capable of using technology efficiently at a higher level than did younger students. However, no statistical difference was found between grades for in-class communication self-efficacy and motivation for learning.

The results of MWU tests in Table 4 confirm a statistical difference between self-directed learning, technology self-efficacy and flipped classroom in favour of students having computer and internet access ($p < 0.05$). In other words, the students with a computer and internet access have better flipped classroom readiness in comparison to those who did not. Flipped classroom is a model that includes in-class and out of class activities. While out of class activities are performed, computer and internet are used actively.

Table-4. Students having computer and internet access.

Having computer		N	Mean	U	p	Having Internet access		N	Mean	U	P
Self-directed learning	Yes	423	397.71	57652.00	.000	Self-directed learning	Yes	478	377.45	61684.50	.449
	No	322	340.54				No	267	365.03		
Technology self-efficacy	Yes	423	420.97	47594.50	.000	Technology self-efficacy	Yes	478	410.93	45871.50	.000
	No	322	309.98				No	267	305.09		
In-class communication self-efficacy	Yes	423	380.52	64922.50	.271	In-class communication self-efficacy	Yes	478	370.78	62752.00	.704
	No	322	363.12				No	267	376.97		
Doing previews	Yes	423	386.19	62522.00	.051	Doing previews	Yes	478	383.92	58595.00	.060
	No	322	355.67				No	267	353.46		
Motivation for learning	Yes	423	392.07	60034.50	.005	Motivation for learning	Yes	478	374.65	63025.50	.777
	No	322	347.94				No	267	370.05		
Flipped Classroom	Yes	423	403.56	55175.50	.000	Flipped Classroom	Yes	478	386.39	57490.00	.025
	No	322	332.85				No	267	349.03		
	Total	745					Total	745			

Students are expected to watch online videos or study the subject by means of using the internet and a computer. Therefore, having a computer and internet access is an important factor that effects their flipped classroom readiness. Clearly it is not surprising therefore that students who are able to readily use a computer and the internet show greater flipped classroom readiness. Moreover, a significant difference exists between those students who are confident of their technology self-efficacy and have computer and internet access, and those that are less confident and do not have regular access to this technology. As expected, the results confirm that the more students use technological devices, the better they are at using them.

Table-5. Frequencies of students' internet usage.

Sub dimensions	Internet usage frequenc	N	Mean	X ²	sd	p	Post-hoc LSD
Self-directed learning	^a Less than 1 hour	356	391.43	23.890	3	.000	a>c
	^b 1-3 hours	297	377.62				a>d
	^c 4-6 hours	55	332.86				
	^d More than 6 hours	37	218.26				
Technology self-efficacy	^a Less than 1 hour	356	319.96	43.545	3	.000	b>a
	^b 1-3 hours	297	415.06				c>a
	^c 4-6 hours	55	445.17				d>a
	^d More than 6 hours	37	438.41				
In-class communication self-efficacy	^a Less than 1 hour	356	390.31	9.909	3	.019	a>d
	^b 1-3 hours	297	367.43				b>d
	^c 4-6 hours	55	353.11				
	^d More than 6 hours	37	280.74				
Doing previews	^a Less than 1 hour	356	380.82	30.216	3	.000	a>d
	^b 1-3 hours	297	394.18				b>d
	^c 4-6 hours	55	321.73				
	^d More than 6 hours	37	203.95				
Motivation for learning	^a Less than 1 hour	356	386.22	21.447	3	.000	a>d
	^b 1-3 hours	297	386.64				b>d
	^c 4-6 hours	55	290.20				
	^d More than 6 hours	37	259.43				
Flipped Classroom	^a Less than 1 hour	356	395.60	21.146	3	.000	a>d
	^b 1-3 hours	297	375.29				b>d
	^c 4-6 hours	55	330.53				
	^d More than 6 hours	37	232.69				
	Total	745					

When Table 5 is examined, it is clearly seen that a statistical difference has been found between the scores of self-directed learning in favour of those students who use the internet less than one hour in a day compared to students using it between 4-6 hours and more than 6 hours ($p < 0.05$). In addition, students using the net 1-3 hours, 4-6 hours and more than 6 hours obtain higher scores on technology self-efficacy than students using the internet less. This result indicates that the more students use the internet, the more they perceive themselves to be proficient in using this technology. Moreover, a statistical difference was seen between the scores for in-class communication self-efficacy, doing previews, motivation for learning and flipped classroom in favour of students using the internet less than 1 hour and 1-3 hours rather than 4-6 hours and more than 6 hours. Based on this finding, it is possible to state that the less students use the internet, the more flipped classroom ready they are.

Flipped classroom seeks to integrate technology into education. Students in a flipped classroom environment are also required to prepare for class and are likely to need to access information and watch lectures in their own time online using the internet. This study confirms that students who are currently using the internet less than 3 hours a day have more flipped classroom readiness.

Table-6. Learners using the internet for social media or entertainment.

Using Internet for social media		N	Mean	U	p	Using the internet for entertainment		N	Mean	U	p
Self-directed learning	Yes	187	322.84	42657.50	.000	Self-directed learning	Yes	341	347.93	60331.50	.003
	No	558	389.05				No	404	394.16		
Technology self-efficacy	Yes	187	417.22	43921.00	.002	Technology self-efficacy	Yes	341	399.41	59684.00	
	No	558	357.59				No	404	350.71		.002
In-class communication self-efficacy	Yes	187	354.80	48601.50	.191	In-class communication self-efficacy	Yes	341	370.57	68053.00	
	No	558	378.40				No	404	375.05		.775
Doing previews	Yes	187	339.33	45724.50	.014	Doing previews	Yes	341	350.30	61141.00	
	No	558	383.56				No	404	392.16		.007
Motivation for learning	Yes	187	350.91	47879.00	.110	Motivation for learning	Yes	341	363.57	65666.00	.267
	No	558	379.70				No	404	380.96		
Flipped Classroom	Yes	187	348.22	47260.00	.068	Flipped Classroom	Yes	341	362.63	65420.00	.237
	No	558	380.59				No	404	381.75		
	Total	745					Total	745			

Table 6 shows that a statistical difference has been found between the scores for self-directed learning and doing previews in favour of those students who do not use the internet for social media and entertainment (such as playing games, listening to music, watching a movie, etc.). However, students who use the net for social media and entertainment indicated greater technology self-efficacy in comparison to the students who don't. In addition, no statistical difference was found between the scores for flipped classroom readiness and using the internet for social media and entertainment ($p > 0.05$). In other words, using the internet for social media and entertainment has no effect on flipped classroom readiness.

Table-7. Learners using the internet for studying.

Using the internet for studying		N	Mean	U	p
Self-directed learning	Yes	391	406.34	56170.00	.000
	No	354	336.17		
Technology self-efficacy	Yes	391	353.75	61924.50	.013
	No	354	394.26		
In-class communication self-efficacy	Yes	391	386.90	63772.00	.062
	No	354	357.65		
Doing previews	Yes	391	412.63	53713.00	
	No	354	329.23		.000
Motivation for learning	Yes	391	384.43	64738.00	.123
	No	354	360.38		
Flipped Classroom	Yes	391	398.82	5.903.00	.001
	No	354	344.49		
	Total	745			

The results of analysis shown in Table 7 reveal a statistical difference between the scores for self-directed learning, doing previews and flipped classroom in favour of those students who use the internet for studying ($p < 0.05$). Nevertheless, students who do not use the internet for studying are more confident of their technology self-efficacy in comparison to students who use it for studying. In light of this result, it is understood that students who use the internet for studying are at high level of flipped classroom readiness than those who don't. In order to implement flipped classroom successfully, students should be eager to study in their own time and to take charge of their own learning. They are required to watch lectures by means of online videos and such applications as Khan Academy, Moddle, Edpuzzle, etc. These findings confirm that usage of the internet for studying mostly effects students' flipped classroom readiness positively.

In Table 8, we see that a statistical difference exists between the scores of all sub-dimensions except in-class communication self-efficacy in favour of the students who perceive themselves ready enough to use technological devices in comparison to those who say their readiness is middle or insufficient ($p < 0.05$). When the nature of flipped classroom is taken into consideration, it is normal for students who are confident in their use of technological devices to have better flipped classroom readiness. Flipped classroom model implementation requires students to use technological devices actively. Students can now reach information and watch presentations whenever and wherever they want by means of tablet, smart phones, laptops, computers, etc. Therefore, being self-sufficient in using technological devices is of great importance for successful flipped classroom implementation.

Table-8. Students' level of technological devices usage.

Level of using technological devices		N	Mean	X ²	Sd	p	Post-hoc LSD
Self-directed learning	^a Enough	387	381.74	12.627	2	.002	a>c
	^b Middle	291	381.85				b>c
	^c Insufficient	67	284.06				
Technology self-efficacy	^a Enough	387	415.31	39.770	2	.000	a>c
	^b Middle	291	342.79				b>c
	^c Insufficient	67	259.82				
In-class communication self-efficacy	^a Enough	387	380.17	2.006	2	.367	
	^b Middle	291	370.93				
	^c Insufficient	67	340.57				
Doing previews	^a Enough	387	378.26	10.389	2	.006	a>c
	^b Middle	291	384.22				b>c
	^c Insufficient	67	293.90				
Motivation for learning	^a Enough	387	381.58	7.170	2	.028	a>c
	^b Middle	291	376.80				b>c
	^c Insufficient	67	306.96				
Flipped Classroom	^a Enough	387	391.41	21.528	2	.000	a>c
	^b Middle	291	374.73				b>c
	^c Insufficient	67	259.18				a>c
	Total	745					

Being proficient in using new technology is an important factor that effects students' flipped classroom readiness. The findings of this study confirm that those students perceiving themselves as being proficient enough or middle in using technological devices have more flipped classroom readiness in comparison to those reporting themselves insufficiently able to use them.

5. Discussion and Conclusion

Coronavirus (COVID-19) infection reported by China in December 2019 turned into an epidemic in weeks, which takes hold of the whole world. In order to reduce the spread of the COVID-19 virus, the widespread closure of schools, colleges, universities, and other educational institutions in many countries become inevitable. In this regard, face to face education has been interrupted and distance learning via internet and computer has recently become popular all over the world. Flipped classroom is one of the newest approaches that gives opportunity for online education. The urgent need for research has therefore been occurred. That's why, investigating the students' readiness for this model has vital importance both for endurance of teaching and learning process and also economic welfare of the countries.

The findings of this study indicate that the majority of secondary school students have quite high flipped classroom readiness. When the findings are evaluated in terms of the sub-dimensions, it is apparent that participant students have high self-directed learning skill. One of the most important characteristics of flipped classroom is to provide a student centered learning environment (Flipped Learning Network (FLN), 2014; Hamdan, McKnight, McKnight, & Arfstrom, 2013; McLaughlin et al., 2014). In order to achieve this model, students must be able to administer their own learning process. Besides, they should be skilled at reaching and analysing information that they need. Although teachers are responsible for planning part of the process, students have the major role. That's why, it is highly significant for students to develop self-directed learning skills if they are to apply flipped classroom successfully.

When the literature is reviewed, it is seen that some studies have investigated the effect of self-directed learning skills on the success of the learning process and concluded that it has positive effect on online learning process (Chou, 2012a, 2012b; Corbel, 2003; Lai, 2011). It is thought that if a student is able to direct their own learning process, they would have a quite high flipped classroom readiness. Nevertheless, some studies show that the flipped classroom environment effects students' self-directed skill positively (Rutkowski & Moscinska, 2013) and that the flipped classroom environment increases students' ability to direct their learning process. Flipped classroom is a model that actively seeks to integrate technology into education. According to Kol (2012) an individual in the 21st century should possess the following characteristics: benefitting from technology efficiently, enterprising, productive, innovator, conscious of responsibilities, self-realized and open to change. As previously mentioned, in flipped classroom, students are required to access to online video lectures and some applications such as Moddle, Khan Academy, Edpuzzle, etc. to learn the subject prior to class time. Similarly, Kim, Kim, Khera, and Getman (2014) emphasize the usage of technology-based materials by students to prepare for class. That's why, this model requires using technology actively at each step of the process.

In the light of findings of the present study, it can be stated that students have high technology self efficacy and this effects their flipped classroom readiness positively. The findings confirm that the participants also have in-class communication self-efficacy. In this respect, when similar studies in the literature regarding the effect of strong communication between teacher and students on flipped classroom success are examined Al-Harbi and Alshumaimeri (2016); Chen, Wang, and Chen (2014); Clark (2013); McLean, Attardi, Faden, and Goldszmidt (2016); Alsancak (2015) & Turan (2015) it can be seen that strong communication between both teacher and students and students and students has a positive effect on flipped classroom success. Moreover, flipped classroom improves teacher-students and students-students relationships. Similarly, Iyitoğlu (2018) conducted a study and stated that flipped classroom strengthens the relationship between teacher and students and provides a flexible

learning environment. A study carried out by Steen-Utheim and Foldnes (2018) stated that in flipped classroom, students feel themselves more valuable, take part in productive group activities, have a closer relationship with their teacher, and cooperate with their teacher and friends. In addition, Cibik (2017); Roach (2014); Wimpenny and Savin-Baden (2013) found in similar studies evidence supporting these findings. Pishghadam, Shayesteh, and Rahmani (2016) showed that to become successful, students' motivation has critical importance in terms of their learning strategies and identity development. As it is well known, active learning is one of the ways of increasing motivation (Day & Foley, 2006).

In flipped classroom, the major responsibility of in-class and out of class time is given to students, not teachers. Bergmann and Sams (2012) clearly state that learners are responsible for watching online video lectures, asking questions, completing preparations and sharing; furthermore, teachers are charged with guiding and giving feedback when needed. Literature review confirms that the more students have motivation for learning, the more they have flipped classroom readiness. This study confirms that participant students have high motivation for learning, so that it is possible to say their readiness for flipped classroom is positive. This model obliges learners to do previews by giving them major responsibility for the learning process. Fulton (2012) indicates that students have to do required preparation well before coming to the classroom, similarly, Sever (2014) states that in flipped classroom, students should have foreknowledge prior to class time in order to increase success. Thus, students being ready for doing previews means that they have high flipped classroom readiness. In flipped classroom, technology is used actively, moreover, use of a computer and access to the internet are two main factors for success with this model. When the findings of the study are examined, it is seen that students who have computer and internet access have more flipped classroom readiness in comparison to ones who don't. Flipped classroom consists of in-class and out of class activities. Out of class activities are undertaken with the aid of a computer and the internet. Lessons can be recorded on video so that students can watch them after class (Missildine, Fountain, Summers, & Gosselin, 2013; O'Flaherty & Phillips, 2015). In addition, watching these videos on a computerised device positively effects their flipped classroom readiness.

This study concludes that students who perceive themselves proficient in the use of technological devices are more flipped classroom ready than their peers who think they only have middling proficiency or who define themselves being insufficiently proficient. Flipped classroom is described as a teaching process that is carried out at home and requires use of the internet, and that reinforces students' self-directed learning with such activities as debates, peer or group activities in class (Kara, 2015). In order for students to undertake previews, they must be able to make efficient use of technological devices and it is expected that students who are proficient in the use of technology are more flipped classroom ready. In the light of this study the following recommendations are offered:

- In order to achieve flipped classroom well, all students' should be able to study using a basic internet enabled computing device.
- Students who perceive themselves insufficient in using technology, should be assisted to acquire basic competence in using a computer and learning materials via the internet.
- In this study, data was collected by means of a scale, but further experimental studies can be carried out to determine other factors effecting flipped classroom readiness.
- This study considered the flipped classroom readiness of 5th and 8th grade students. New and original studies should be carried out with learners at other levels.
- This study only analysed the flipped classroom readiness of students. Future studies may examine the flipped classroom readiness of teachers.

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