*Full research paper*

# THE RELATIONSHIP BETWEEN SECONDARY SCHOOL TEACHERS AND STUDENTS' READINESS OF USING FLIPPED CLASSROOM

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## ABSTRACT

The emergence of instructional technologies has made inevitable changes in educational settings. The flipped classroom that integrates education with technology has grown in popularity in recent years. This study intends to investigate the relationship between secondary school teachers' and their students' flipped classroom readiness. Data were collected through a scale for flipped classroom readiness of teachers and their students. There were 745 participants randomly selected from 5th and 8th grade students and 233 teachers from five different secondary schools in Elazig, Turkey. It is concluded that teachers and students are generally ready to apply this model. Additionally, there is a positive relationship between teachers and their students' technology self-efficacy. Also, the students whose teachers are open-minded have more positive opinions on the flipped classroom. The study hopes to contribute to the increase in the usage of the flipped classroom in educational settings regarding both teachers' and their students' readiness. It has pedagogical implications for teachers to be trained and given more knowledge about the model so that the more the teacher is informed with the flipped classroom the more students can benefit.

## KEYWORDS

**Flipped classroom readiness, flipped learning, planning classroom time, teaching and learning, technology-based learning**

## HOW TO CITE

Kazu İ. Y., Yalçin C. K. (2022) 'The Relationship Between Secondary School Teachers and Students' Readiness of Using Flipped Classroom', *Journal on Efficiency and Responsibility in Education and Science*, vol. 15, no. 1, pp. 1-9. http://dx.doi.org/10.7160/eriesj.2022.150101

**Article history**
**Received**
February 1, 2021
**Received in revised form**
September 27, 2021
**Accepted**
February 21, 2022
**Available on-line**
March 22, 2022

***Highlights***

- *Teachers' and their students' flipped classroom readiness affect each other positively.*
- *There is a positive relationship between teachers and their students' technology self-efficacy.*
- *The students whose teachers are open-minded have more positive opinions on the flipped classroom.*
- *Secondary school teachers have high readiness for the flipped classroom rather than their students.*

## INTRODUCTION

Consistent change and development of technology causes some alteration in the teaching and learning process. Especially nowadays, our world is under the influence of an epidemic, Covid-19. Because of this illness, face to face education has been interrupted and distance learning through computers and internet has become popular. That's why benefiting from information and communication technologies in education has become inevitable (Dikmen and Tuncer, 2018). Bernacki, Greene and Crompton (2020) claim that integrating technology with the teaching and learning process can become more efficient so that qualified individuals may be raised in this way. Hereby, it makes using new learning approaches the current issue. In this regard, flipped classroom, based on the inverting of the traditional classroom model by introducing course subjects before class, allowing teachers to use class time to guide each student through active, practical, innovative applications of the course (Strelan, Osborn and Palmer, 2020), has become popular recently as one of the newest learning approaches. The flipped classroom is a current teaching and learning model that gives a chance for online education. Brooks (2014) defined the flipped classroom that has become popular in recent years as a combination of instructional technologies and active learning strategies. Research that was carried out confirmed

that students' attention decreases after the 10 minutes of class, although returning their attention to the class can be managed, they can remember only 20% of items that presented during the class (Mohanty and Parida, 2016). Traditional education gives students the opportunity to read the coursebook, listen to the lecture in class time and work on problem sets out of class time. On the contrary, the flipped classroom is centred on the idea that to attain success in education by providing online video lectures to learners before class time and expecting them to work and understand the subject prior to coming to class, thus enabling the teacher to reinforce the subject with metacognitive activities (Akçayır and Akçayır, 2018).

Technology integrated with the teaching and learning process increases the quality of education and changes the ways teachers teach and learners learn (Wells, de Lange, and Fieger, 2008). The education system has begun to emphasize learner-centred learning environment rather than teacher-centred instruction (Hwang, Lai and Wang, 2015). As it is known, traditional educational settings can't support students' higher-order skills adequately (Bergman and Sams, 2013). With the development of science and technology, it has been agreed that teacher-centred education system should be abandoned. In order to comply with the age's needs, student-centred education system should be adopted. This alteration causes changes in the understanding of the teacher. The understanding of the traditional teacher who is a strict knowledge provider has been replaced with the concept of a teacher who guides students to learn learning on their own. It is known that teachers play an essential role in students' education life. Teachers are the critical point that makes children ready for the age of technology. According to Prensky (2001), children of our age are digital natives. They were born in technology and are used to solving almost all of their problems with technology. In this case, we can't expect them to learn the lectures, do homework, read the textbooks like the previous generation. Based on Prensky's (2001) definition for digital natives, teachers have to alter the learning environments by abandoning the traditional instructional approach. In such a renovated century, learning environments are expected to be equipped with technology at the highest order (Bolat, 2016). It is approved that there is a strong association between the approach that teachers' adopt and learners' learning (Prosser and Trigwell, 1999). The learning environment that teachers provide is a place where they implement their perceptions of teaching and learning. That's why, if teachers equipped their classroom and teaching with technology, it could be inevitable that students become integrated with technology. On the other hand, teachers should be open-minded to change their teaching habits in learning context and be open to apply new teaching and learning methods in educational settings. They should follow new developments in education and be eager to apply the ones that are suitable for them and their students in their learning environment. The flipped classroom is a recent approach that integrates technology into education (Şahin, Ökmen and Kılıç, 2020). This model aims to answer the needs of digital natives who could have video calls and send text messages, which could happen in minutes via technology (Asogwa, 2020). Yough et al. (2017) confirm that the flipped classroom eliminates the limitations of traditional instruction by motivating teachers and learners. With the help of this student-centred method, students can find the opportunity to learn the subject by watching recorded videos at their own pace independently of time and place outside the classroom (Asef-Vaziri, 2015; Moos and Bonde, 2016; Sun, Xie and Anderman, 2018). While students are expected to take their own learning responsibility (Davies, Dean and Ball, 2013; Kong, 2014), teachers are supposed to plan metacognitive activities such as problem-solving, debates, group activities, etc. to reinforce students' learning in the classroom (Asef-Vaziri, 2015; Filiz and Kurt, 2015; O'Flaherty and Phillips, 2015; La-Marca and Longo, 2017). While Shih and Tsai (2017) approve that flipped classroom allows more active learning strategies in classroom, Blau and Shamir-Inbal (2017) express the advantage of this model as taking care of students individually. On the other hand, implementation of this model lays a burden on teachers and students. Both of them are required to be eager to do previews, although it has been considered to reduce teachers' duties and classroom preparation (Filiz and Kurt, 2015).

## LITERATURE REVIEW

For the first time, flipped classroom system has begun to be used by the professors of economy at Miami University in the field of business, law, sociology, psychology and philosophy because of the extra reading tasks (Lage, Platt, and Treglia, 2000). Flipped classroom proposed by Bergmann and Sams (2007), who are working as teachers at Woodland High School, was developed for students who could not attend regular classes. Thus, this model has become popular in the field of education and attracts almost all of the instructors' interest. Furthermore, the instructors from Northern Colorada University began to spend their class time for activities and group work, and to apply online or downloadable lecture videos to teach the content (Bergmann and Sams, 2012). In this way, it has become widespread with more than thousands of users (Talbert, 2012).

The flipped classroom, also known as inverting the classroom, is a process that reverses the traditional instruction model. Teachers are the providers of knowledge, and students are given the task of solving the problem at home in the traditional classroom model. The flipped classroom, presented as an alternative to the traditional learning approach (Şen and Hava, 2020), is based on learning the lecture by students on their own via online or recorded video lessons by using the internet and technology and reinforcing the subjects in class at the guidance of the teacher with metacognitive activities. Inverting the classroom; taking the information out of class time by reading or listening to the videos, in class time, practising the lecture with the help of challenging and metacognitive activities such as debate, problem-solving, group activities, is considered as a way of success (Seaman and Gaines, 2013).

The implementation of the flipped classroom in learning environments increase students' motivation for learning (Gannod, Burge and Helmick, 2008; Davies, Dean, and Ball, 2013), academic performance (Tune, Sturek and Basile, 2013; Yestrebsky, 2014; Kong, 2014; Bösner, Pickert and Stibane, 2015), collaboration competence (Strayer, 2012), positive attitude towards the lecture (Touchton, 2015; McLaughlin et al.,

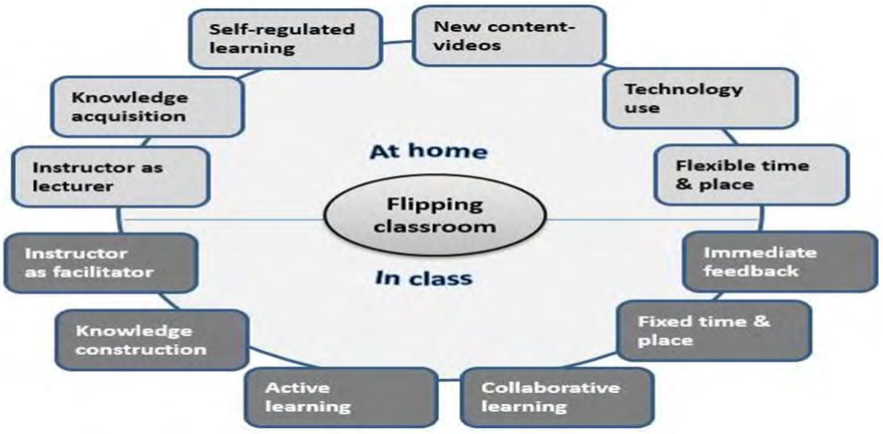


**Figure 1: The components of flipped classroom model (source: Blau and Shamir-Inbal, 2017: 75)**

2014; Johnston, 2017) also reduce their anxiety level (Marlowe, 2012). For instance, the study results conducted by Wiginton (2013) showed that implementation of the flipped classroom has a *positive* effect on students' mathematics success. Cummins-Sebree and White (2014) found that the students who prepared for the class before were more active during the class time than the others. Kong (2014) confirmed that flipped classroom had positive effects on learners' reflective thinking skills and information literacy. Touchton (2015) concluded that flipped classroom was found more *enjoyable* than the traditional approach and supported learning. Yestrebsky (2015) carried out an experimental study to investigate the effects of the flipped classroom on students' success. The study confirmed that the students who learned chemistry via the implementation of the flipped classroom became more *successful*. Bhagat, Chang and Chang (2016) carried out an experimental study and reached *similar* results. While Moos and Bonde (2016) found that watching recorded videos at their own pace increased learners' motivation, similar results were achieved by Hung (2017). Almost all of the studies carried out in this field claimed that this model *develops* students' academic performance as well as their critical thinking, teamwork, self-assessment competencies.

Although many studies were carried out to investigate the effects of the flipped classroom on learners' success and motivation, no study which investigates the effects of teachers' readiness for this model on students' readiness has been carried out so far. This study is significant because it presents the findings related to the relationship between the flipped classroom readiness of teachers and their students. It aims to investigate in which perspectives teachers' readiness effect their students' flipped classroom readiness. In the light of the main goal, the paper addressed the following hypothesis.

- *The beliefs of teachers' and their students' will be positive about their flipped classroom readiness.*
- *No significant difference will exist in the students' flipped classroom readiness with the teachers'.*
- *There will be a positive relationship between teachers' and their students' flipped classroom readiness.*

## MATERIALS AND METHODS

### Research Model

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

### Participants

A total of 745 students and 233 teachers from five different secondary schools in Elazig were enrolled in the study conducted in the 2018–2019 academic year. 383 5$^{th}$ graders and 362 8$^{th}$ graders, totally 745 students, and 233 teachers were recruited by simple random sampling in five schools. All participation in the study was on a voluntary basis.

Accordingly, 53.2% of the participants are female and 46.8% are male. According to *the school variable*, 20.5% of the students are from Mustafa Kemal, 18.4% from Şehit Önder Pınar, 25.1% from Cumhuriyet, 23.0% from Bahçelievler and 13.0% from Avukat İbrahim Gök Secondary School. According to the demographic information of teachers, 65.2% of the participants are female and 34.8% are male. When *the gender variable* is considered, it can be stated that the number of female teachers is higher than male teachers. According to *the school variable*, 28.5% of the teachers are from Mustafa Kemal, 21.0% from Şehit Önder Pınar, 26.2% from Cumhuriyet, 17.2% from Bahçelievler and 9.8% from Avukat İbrahim Gök Secondary School. In addition, 16.7% of them are between 22 and 29 years old, 31.3% of them are 30–37 years old, 32.6% of them are 38–45 years old, and 19.4% of them are 46 and more. It can be said that the majority of participants are between 30–37 and 38–45. The majority of participants are Turkish, Maths, Science and English teachers respectively. Finally, 16.7% of teachers have 1–5 years professional seniority, 21.5% have 6–10 years, 18.4% have 11–15 years, 18.9% have 16–20 years and the rest have 20 years and more.

| Students | | Frequency | Percentage | Teachers | | Frequency | Percentage |
|---|---|---|---|---|---|---|---|
| Do you have a computer? | Yes | 423 | 56.8 | Do you have a computer? | Yes | 222 | 95.3 |
| | No | 322 | 43.2 | | No | 11 | 4.7 |
| Do you have an Internet access? | Yes | 478 | 64.2 | Do you have an Internet access? | Yes | 213 | 91.4 |
| | No | 267 | 35.8 | | No | 20 | 8.6 |
| How do you perceive yourself to use the technological devices? | Enough | 387 | 51.9 | How do you perceive yourself to use the technological devices? | Enough | 102 | 43.8 |
| | Middle | 291 | 39.1 | | Middle | 114 | 48.9 |
| | Insufficient | 67 | 9.0 | | Insufficient | 17 | 7.3 |
| How often do you use the Internet in a day? | Less than 1 hour | 356 | 47.8 | What kind of technological equipment are there in your school? | Smart board | 184 | 79.0 |
| | 1-3 hours | 297 | 39.9 | | Internet | 125 | 53.6 |
| | 4-6 hours | 55 | 7.3 | Do you use the technology actively in your classroom? | Yes | 157 | 67.4 |
| | More than 6 hours | 37 | 5.0 | | No | 76 | 32.6 |
| Why do you use the Internet most? | Social media | 186 | 24.9 | | | | |
| | Entertainment | 216 | 28.9 | | | | |
| | Study | 343 | 46.2 | | | | |
| | **Total** | **745** | **100.0** | | **Total** | **233** | **100.0** |

**Table 1: Information about students' and teachers' technology usage, (source: own calculation)**

As shown in Table 1, 423 of the participants have access to a computer, and 478 have internet access. In addition, 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. 47.8% of them use the internet less than one hour, 39.9% of them 1–3 hours, 7.3% of them 4–6 hours, and 5.0% of them more than 6 hours in a day. 24.9% of the participants use the internet *mostly* for social media, 28.9% for entertainment (playing games, listening to music, etc.), and 46.2% for studying. As seen in the table, 222 of the participant teachers have a computer and 213 of them have *internet access.* In the light of this data, it can be said that most of the participant teachers have *computer and internet access.* 43.8% perceive themselves as being enough to use technological devices, 48.9% express themselves as middle, while 7.3% express as insufficient. Accordingly, there is a smart board at 184 of participant teachers' school, while 125 teachers have internet access in their classrooms. Moreover, 157 participant teachers express that they *use* the technology actively in their classrooms.

## Data Collection Tools

Two different scales were used for data collection. A Scale for Flipped Classroom Readiness of Secondary School Students' developed by Hao (2016) and adapted to Turkish by Durak (2017) was used for collecting data from students. 'A Scale for Flipped Classroom Readiness of Secondary School Teachers' was adapted by the researcher from the scale for students.

The students' 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 from strongly disagree (1) to strongly agree (5). Reliability analysis has been performed and a Cronbach's Alpha score of 0.864 was obtained. Cronbach's Alpha Scores for the sub-dimensions are 0.942, 0.956, 0.897, 0.820, 0.705 respectively. A Scale for Flipped Classroom Readiness of Secondary School Teachers consists of 36 items and 5 sub-dimensions, namely students' *control self-efficacy, technology self-efficacy, self-efficacy for planning classroom time, readiness for preparatory work* and *being open-minded*. The scale is a 5-point Likert Scale from strongly disagree (1) to strongly agree (5). Reliability analysis has been performed and a Cronbach's Alpha of 0.883 was obtained. The analysis has shown that Cronbach's Alpha Score of the sub-dimensions are 0.799, 0.931, 0.853, 0.910, 0.922 respectively.

## Data Analysis

Data were analyzed using SPSS Version 22.0. In order to analyze demographic data, descriptive statistical methods such as percentage, mean and standard deviation were used. Moreover, to evaluate the data according to the variables, *Shapiro Wilk* test and *Kolmogrov Smirnov* were performed and homogeneity of variances was tested. The one-sample *t*-test to determine whether an unknown population mean is different from a specific value was administered, an independent sample *t*-test for comparing the mean scores of the participants was chosen and to determine the relationship between students' and teachers' scores correlation analysis was used.

## RESULTS

Findings are given as to whether the scores of the students and teachers that took part in the sample group correlated significantly. The findings obtained by research are presented in the tables.

The results of the implemented analysis confirm that students and teachers 'strongly agree' with having the qualities flipped classroom requires (*Students' Mean* = 3.86) and (*Teachers' Mean* = 3.94). In the light of the data, it can be said both of them were highly skilled in five-sub-dimensions. As shown in Table 2, students 'strongly agree' with having self-directed learning skill (*Mean* = 3.83), technology self-efficacy (*Mean* = 3.61), in-class communication self-efficacy (*Mean* = 4.00), motivation for learning (*Mean* = 4.04), doing previews (*Mean* = 3.86).

| Student (*N*=745) | | | | Teacher (*N*=233) | | | |
|---|---|---|---|---|---|---|---|
| | *M* | *Sd* | *p* | | *M* | *Sd* | *p* |
| Self-directed learning | 3.83 | .61366 | .050 | Providing students' control self-efficacy | 3.92 | .54487 | .045 |
| Technology self-efficacy | 3.61 | .77348 | .032 | Technology self-efficacy | 4.13 | .81386 | .024 |
| In-class communication self-efficacy | 4.00 | .92367 | .048 | Self-efficacy for planning classroom time | 4.24 | .63712 | < .001 |
| Doing previews | 3.86 | .95866 | .036 | Readiness for preparatory work | 3.43 | .78868 | .035 |
| Motivation for learning | 4.04 | .87489 | < .001 | Being open-minded | 4.00 | .75245 | .018 |
| Flipped Classroom | 3.86 | .60237 | < .001 | Flipped Classroom | 3.94 | .59720 | < .001 |

**Table 2: Teachers' and students' beliefs about their flipped classroom readiness, (source: own calculation)**

On the other hand, teachers 'strongly agree' with being able to provide students' control self-efficacy (*Mean* = 3.92), technology self-efficacy (*Mean* = 4.13), self-efficacy for planning classroom time (*Mean* = 4.24), readiness for preparatory work (*Mean* = 3.43), being open-minded (*Mean* = 4.00). The standard value is 3.00 in this study. Accordingly, the flipped classroom readiness of secondary school students and teachers is *positive* in general ($t = 8.756$, $p < .001$; $t = 13.354$, $p < .001$). We failed to reject the hypothesis "*The beliefs of teachers' and their students' will be positive about their flipped classroom readiness*." Therefore, it can be interpreted from the findings that secondary school teachers and students are generally ready to apply this model in educational settings.

| | *M* | *SS* | *Sd* | *t* | *p* |
|---|---|---|---|---|---|
| Flipped Classroom Readiness (Teacher) | 3.843 | .56521 | .03967 | 7.386 | < .001 |
| Flipped Classroom Readiness (Student) | 3.380 | .61499 | .04316 | | |

**Table 3: Teachers' and their students' on flipped classroom readiness (source: own calculation)**

When the independent sample *t*-test result given in Table 3 is examined, secondary school teachers flipped classroom readiness demonstrates a statistically significant difference according to the flipped classroom readiness of students ($p < .001$). The hypothesis which stated that *"No significant difference will exist in the students' flipped classroom readiness with the teachers'."* has been rejected. It can be interpreted from this finding that secondary school teachers believe that they have the required competence for applying the flipped classroom in their courses. When the results are examined according to the sub-dimensions, they expressed having a skill of providing students' control, using technology, planning classroom time, doing preparatory work and being open-minded. Thereby, teachers have high readiness for the flipped classroom rather than their students.

| Teacher \ Student | | Self-directed learning | Technology self-efficacy | In-class communication self-efficacy | Motivation for learning | Doing preview | Flipped classroom readiness |
|---|---|---|---|---|---|---|---|
| Providing students' control self-efficacy | r | .051 | .533** | 021 | .088 | .004 | .124 |
| | p | .470 | **< .001** | .768 | .214 | .956 | .078 |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |
| Technology self-efficacy | r | .006 | .438** | .076 | .012 | .007 | .039 |
| | p | .936 | **< .001** | .281 | .866 | .922 | .585 |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |
| Self-efficacy for planning classroom time | r | .001 | .451** | .045 | .040 | .048 | .019 |
| | p | .992 | **< .001** | .528 | .575 | .499 | .784 |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |
| Readiness for preparatory work | r | .083 | .625** | .031 | .092 | .001 | .147* |
| | p | .237 | **< .001** | .659 | .193 | .985 | **.036** |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |
| Being open-minded | r | .230 | .833** | .139* | .108 | .124 | .270** |
| | p | .044 | **< .001** | **.048** | .125 | .077 | **< .001** |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |
| Flipped classroom readiness | r | .065 | .696** | .014 | .061 | .018 | .143* |
| | p | .359 | **< .001** | .846 | .390 | .800 | **.042** |
| | n | 203 | 203 | 203 | 203 | 203 | 203 |

**Table 4: The relationship between teachers' and students' flipped classroom readiness in terms of their sub-dimensions (source: own calculation)**

The results of the correlation analysis show that there was a positive relationship between teachers' providing students' control self-efficacy and students' technology self-efficacy. Based on the results, it was understood that when the teachers can provide their students' with control, their students have more technology self-efficacy. The flipped classroom is a technology-based model in which students take their own learning responsibility by using technology. However, this model doesn't reduce teachers' duties to facilitate their learning process. We can say that a good facilitator teacher gives his students encouragement to use technology in their learning. Moreover, for a successful implementation of the flipped classroom, teachers must use technology as well as students. The results of the implemented analysis confirmed a *positive* relationship between teachers' and their students' technology self-efficacy ($r = .438$, $p < .001$).

Flipped classroom model, which is based on the integration of technology with education, expects teachers and learners to use the technology in learning environments at the highest level. We can understand from the results that teachers play critical role for this issue. On the other hand, it was found that teachers' competence for planning the classroom time had a *positive* effect on students' technology self-efficacy. The success of implementation flipped classroom depends on a planned and well-organized classroom time. At that point, teachers are supposed to work as a maestro to plan their students both out of class learning and metacognitive activities. A well-planned classroom increases students' motivation, they learn more on their own by using technology. In addition, there was a *positive* relationship between teachers' readiness for preparatory work and students' technology self-efficacy and flipped classroom readiness. In the flipped classroom model, students are required to watch online lectures and study the subject before coming to the class (Baker, 2012). The teacher controls their learning process and guides them to be responsible. To achieve this, the teacher is required to prepare an online environment and to provide strong interaction for students (Evseeva and Solozhenk, 2015).

Contrary to popular belief, this model gives more duty to teachers than students. That's why it isn't surprising that if teachers are ready to work hard, students will always be ready. The flipped classroom has recently become popular and is one of the newest learning approaches. Teachers are expected to follow new developments in the field of education and be open-minded to apply them in their classrooms. The results of the analysis showed that there was *a good* relationship between teachers' being open-minded and students technology self-efficacy, in-class communication self-efficacy and flipped classroom readiness ($p < .001$; $p = .048$; $p < .001$). Moreover, students' technology self-efficacy, flipped classroom readiness effects positively teachers' flipped classroom readiness ($p < .001$; $p = .042$). We failed to reject the hypothesis that *"There will be a positive relationship between teachers' and their students' flipped classroom readiness."*. It can be interpreted from this finding that flipped classroom readiness of teachers affects their students' readiness for this model *positively*.

## DISCUSSION

These days, our world is under the influence of an epidemic, Covid-19. In this regard, face to face education has been interrupted, and distance learning via the internet has recently become popular worldwide. The flipped classroom is one of the newest approaches that gives the opportunity for online education. The urgent need for research has therefore occurred. That's why investigating the teachers' and their students' readiness for this model has vital importance both for the endurance of the teaching and learning process and the economic welfare of the countries.

This study investigate the relationship between teachers' and their students' flipped classroom readiness. The findings of this study show that the flipped classroom readiness of teachers is higher than their students'. The flipped classroom is a teaching method provided through recorded videos outside the classroom (Chuang, Weng, and Chen, 2018; Findlay-Thompson and Mombourquette, 2014; Kong, 2014). To reinforce students' previous learning, teachers plan the classroom time with metacognitive activities, increased analysis, synthesis, evaluation skills (Asef-Vaziri, 2015; Filiz and Kurt, 2015; O'Flaherty and Phillips, 2015; La-Marca and Longo, 2017). The traditional approach puts a barrier in front of teachers to apply higher-order activities due to the limited classroom time. They try to finish the curriculum to prepare students for examinations. However, the flipped classroom claims to eliminate these barriers by carrying the teaching time to home, only practising the lecture in class. Thus, they can find the opportunity to answer the students' needs individually. These issues support the findings of this study. Since it presents various chances to teachers, it isn't surprising that they are eager to apply this model in their classrooms.

It is concluded that providing students' control self-efficacy of teachers affects students' technology competence positively. As it has been known that students' own learning should be planned and evaluated by teachers via some applications such as Kahoot, Moodle etc. or sending some quizzes online, this is a key to success in the flipped classroom. This type of classroom changes the role of teachers by reducing explanation time but increasing stimulating, supporting and advising students. Sharples et al. (2014) emphasized that crucial role of a teachers as a guide for learners rather than teaching the lecture directly. Moreover, Grover and Stovval (2013) highlighted the task of teachers to facilitate the students' learning. These studies confirm that teachers are a prerequisite for successfully implementing flipped classrooms. As found in our study, it is possible to comment that teachers' self-efficacy for providing students' control all the time encourages them to use technology more.

It is observed that there is a *positive* relationship between teachers' and their students' technology self-efficacy. It can be understood that the learners equipped with 21st century competences are only instructed with competent teachers. There is no doubt that 21st century generation is

different from the previous one. As Prensky (2001) said, this generation was born in technology, called *digital natives*. Thereby, it is nonsense to expect them to learn and do homework in traditional learning settings. With the development of the internet and the digital world, the way of accessing and transmitting knowledge has changed. In line with this alteration, putting the students in the centre of the process and making materials available for them is a must. It is agreed that teachers should use the technological equipment at the highest order in their classroom (Filiz and Kurt, 2015) to answer their students' needs.

Throughout the study, it is seen that there is a *positive* relationship between teachers' readiness to take responsibility to make preparations and students' flipped classroom readiness. For an effective flipped classroom, the teachers should take on more responsibility compared to the traditional approach (McLaughlin et al., 2014). They should carry out a role whereby they can organize students' learning by preparing the lecture videos or providing online applications and planning in-class activities that increase the learners' higher-order skills. The time should be reorganized both inside and outside the classroom. Although some people think that this model reduces teachers' duties by giving great responsibility to the students (Filiz and Kurt, 2015), there is an exact opposite situation. At the end of the research, it can be inferred that if a teacher becomes ready to take responsibility for the teaching preparation and learning process, students' flipped classroom readiness will be higher.

This study concludes that there is a *positive* relationship between teachers' open-mindedness and their students' in-class interaction self-efficacy and flipped classroom readiness. Students whose teachers are open to new ideas have more flipped classroom readiness. To achieve this, teachers are expected to follow current approaches in the field of education to keep up with the latest developments. Furthermore, they are supposed to be open-minded to change their teaching habits and apply the new approaches that are suitable for them and their learners.

As a result of the research, it can be stated that being open-minded of teachers give us an idea about their students' flipped classroom readiness. Moreover, this study confirms that the students whose teachers are more open-minded have more in-class interaction self-efficacy than others. Based on this result, it can be commented that since open-minded teachers provide more flexible and relaxed classroom settings, the students can get in touch with each other well in classroom.

Various suggestions can be presented based on the results obtained throughout this research. Some of them are as follows: Teachers should be trained and given more knowledge and information about the model. The more the teacher is informed with this approach the more students benefit. Further studies, research and investigation should be conducted on the model to ensure all teachers use this model. Stakeholders in education should provide the necessary tools and equipment such as computers and the internet for swift implementation of this model. Students should be encouraged to watch the videos and other materials at home to help them understand the content before the lesson in class. In this study, data were collected by means of a scale, but further studies should be carried out with experimental or control groups and applying pre-test and post-test. This study is carried out with secondary school teachers and students. But similar studies should be developed within academic fields in universities. Finally, it is suggested that other subject areas in the field of education which are yet to use the flipped classroom must be encouraged.

## CONCLUSION

This research has shown us that teachers' and their students' flipped classroom readiness positively affects each other. However, the flipped classroom readiness of teachers is higher than their students. This model is based on providing online video lectures to learners before class time and expecting them to work and understand the subject prior to coming to class, thus enabling the teacher to reinforce the subject with metacognitive activities such as group discussions, station technique, jigsaw, etc. in the classroom. Thus, teachers can find time to answer students' needs individually. While the flipped classroom has fundamentally changed the traditional role of the teacher in the learning process, its success depends on teachers being facilitators of learners' learning. They are expected to encourage learners' self-directed learning skills and help learners become responsible for their learning. Given that flipped classroom is a technology-based model, teachers have a critical role in maintaining motivation, providing guidance for learners and encouraging them to take responsibility of their own learning. Clearly, these activities specify new roles for teachers that are important factors in the achievement of the flipped classroom. This study shows that teachers are ready to take responsibility and to utilize the opportunities this model provides.

Technology has become an integral part of educational settings and the process of developing education policy by using technology has begun. Technology integrated with teaching and learning process increases the quality of education and changes the ways teachers teach and learners learn. Since the flipped classroom requires the integration of technology and education, in order to achieve this model, teachers and students should have technology self-efficacy. This research has shown us that teachers' skills to use technology affect their students' competence to use technology. Furthermore, the students whose teachers are open-minded, have *more positive* opinions on the flipped classroom. It can be concluded that teachers are a mirror for their students. They reflect back to the teachers what they give.

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