

Teachers' Perceptions on the Impact of Flipped Learning on Student Learning and Teacher's Role in Jordanian Schools

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Abstract The current study investigated Jordanian teachers' perception on the impact of flipped learning on students' learning, teachers' role, and challenges facing its implementation. Teachers' perceptions were investigated in respect to their sex, experience, and teaching subjects. Participant in the study were all the (126) teachers who had already implemented flipped learning and they were considered innovative in their schools as they were the first to implement flipped learning in their teaching practices in Amman, the capital of Jordan. All participants filled teachers' perception on flipped learning questionnaire, which consisted of (37) items in three dimensions: flipped learning's impact on students' learning, teacher's role, and challenges to its implementation. The study was conducted during the second semester of the academic year 2018/2019. Means, standard deviations, MANOVA, and Scheffe's test were used to answer the research questions. The results of the study showed teachers' overall positive attitude toward flipped learning model believing that it improves student learning and transforms teachers' role. Additionally, the results showed that female teachers had stronger views that flipped learning improves students' learning, transforms teachers' roles in the classroom, and faces challenges.

Keywords Flipped Learning, Teacher's Role, Teachers' Perception, Educational Trends

opportunities it creates for students. However, this can create a dilemma for teachers who are still stuck in traditional perception of education, especially in terms of the roles of teachers and students in learning. Thus, pervasiveness of new technology in students' lives has challenged the traditional role of the teacher especially in term of the content and its delivery. There is a vast amount of information on the internet and various digital tools have make sharing and delivering content effortless.

Modern technology has provided opportunities for students to learn beyond the traditional temporal and spatial limits of the classrooms. Classrooms are no longer immune to changes brought about by modern technologies thus; learning is no longer confined to what happens in the classroom. Accordingly, the significant learning opportunity for students beyond classrooms has challenged teachers and education systems to redefine their roles. The fundamental changes brought by the pervasiveness of new technologies require teachers to rethink and reposition themselves to the learning process. The roles of teachers, students, and the technology itself need to relate properly to each other in the new educational landscape. Therefore, new roles have emerged for teachers as facilitators, guides, mentors, orchestrators [1], and designers of learning experiences [2]. However, these roles of the teacher also require fundamental and necessary changes in students' roles and understanding of learning requiring them to reclaim responsibility of their learning [3].

1. Introduction

Significant advances in digital technology have led to fundamental changes in various aspects of our lives. In education, technology has paved the way for new teaching strategies and models because of the new learning

1.1. Flipped Learning

New teaching strategies and models have emerged due to the widespread of digital technology. E-learning, mobile learning, MOOCs, blended learning, and flipped learning are only few examples of new trends in education that rely heavily on digital technology. Flipped learning,

which has gained increasing attention since the inception of the term around 2011 [4], relies on digital technologies in order to redesign learning. It is introduced as an innovative approach to teaching and learning especially in light of the advancement and ubiquitousness of digital tools [5-8]. The model relies on the power of new technologies in order to provide students with the content and materials in digital formats making them accessible outside the classroom paving the way to class to be more engaging and active.

One of the most important principles underpinning flipped learning is its attempt to redefine the role of classrooms (group space) and homes (individual space) in the learning process [6, 9, 10]. The model relies on technology-enhanced instruction outside the classroom in order to maximize students' engagement and learning in the group space where students interact directly with other students and the teacher [8]. It emphasizes that when students come to the classroom they should be ready for learning [11].

A large body of research has explored flipped learning and its impact on teaching and learning worldwide [9, 10, 12-17]. A study conducted by [8] aimed at investigating the impact of flipped learning on improving learning showed that flipped learning supports the employment of active learning activities and it opens the way for the learner to choose what and how to learn. In Singapore, [38] conducted a qualitative study on teacher perception on the potential of flipped classroom pedagogical practice in enhancing classroom interactions. In addition, Butt [18] conducted a study aimed at exploring students' perceptions on flipped learning by conducting a descriptive study at the Australian National University, which showed positive attitudes among students towards flipped learning compared to traditional teaching.

In flipped learning, the group space activities are carefully designed in order to enable students to utilize the knowledge and understanding they gained in the individual space at home. When students come prepared and ready to the classroom, they can be better in integrating newly acquired knowledge and skills into their prior knowledge enabling them to tackle tasks and learning activities effectively [19]. Furthermore, in-class time is freed from lecturing and information transmission in flipped classroom. The saved time can be invested in improving students' higher order thinking abilities [20]. Thus, students engage with higher order activities in the group space and they improve their learning through interacting with others resulting in better problem-solving, analyzing, discussion, and debates [21]. The teacher is present in the group learning space and ready to guide and help when needed [7]. The presence of the teacher in the classroom can be crucial to students to accomplish tasks by providing timely helpful assistance [22]. Therefore, instead of lecturing and being the sole provider of knowledge, according to Butt [23], teachers may use

classroom time to allow students to apply and discuss what they acquired by watching videos. Instead of merely transferring lecture notes to the notebooks of the students without passing through their brains [24], teachers can engage students building on the prior knowledge of the subject that they developed at home. However, the success of flipped learning implementation relies heavily on the role of the teacher and his/her ability to design new learning experiences benefiting from the power of the digital tools.

1.2. Teacher's Role and Perception

Teachers are a corner stone in the learning process. They are integral to the success of educational initiatives related to classroom practices because they are not passive accepters of plans created at the upper levels of education systems [25]. Instead, teachers are the final arbiters of classroom practices [26, 27]. According to [2], teachers discover how to make productive connections between themselves, their learners, and their subject. They assume a crucial role in designing classroom environments that encourage students to become active, self-motivated learners [28]. Therefore, teacher related factors, such as their beliefs and attitudes [29-31] as well as their competence and skills [32], are considered essential to the success of educational practices.

Efforts to implement initiatives into schools must take factors related to the teacher into account as they outweigh factors related to other levels of the education systems such as school leadership, educational directorates, and ministry of education [33, 34]. According to [28], decisions made each day in the classroom and teacher's instructional practices are associated with teachers' perceptions.

Teachers are significant social agents as they shape the quality of students' intellectual and social experiences [35, 36]. In respect to new technologies, teachers' perceptions are a key factor to their adoption and implementation. When teachers have positive attitudes toward a new technology or new approach, they are more likely to search for ways to use them in their teaching. On the other hand, although technology might be present in the classroom, teachers might not use them properly because of their negative attitudes. Thus, negative attitudes might be the reason behind the failure to integrate technology and other innovative ideas properly in the classroom [37] rather than the failure of the technology itself. Nevertheless, teachers' perceptions on educational initiatives and practices are not often investigated. In Jordan, like many other developing countries where top-down educational policy is predominant, teachers' voices, in respect to future educational directions, are least heard.

1.3. Innovative Teachers

Teachers, according to the categorization of [25], fall into five main categories in respect to their uptake of innovations in schools: innovators, early adopters, early majority, late majority, and laggards. Innovators are the teachers who are obsessed with seeking information about new ideas, trying to find better ways to do things. They do not wait until new ideas (e.g. flipped learning) are imposed on them. They are known in their schools by their innovativeness and relentless search for new teaching ideas.

Innovative teachers are a main driver for school change especially in teaching practices so; their creative ideas are certainly the nucleus for educational reform [39]. They are the ones who always search for new ideas in order to improve their teaching [25]. They draw the lines for other teachers and set the compass for future directions.

1.4. Purpose and Significance of Research

The present study aimed to shed light on teachers' perception on the impact of flipped learning on students' learning, teacher's role, and challenges facing the implementation of flipped learning in Jordanian schools by trying to answer the following research questions:

1. What are the perceptions of teachers on the impact of flipped learning on students' learning?
2. What are the perceptions of teachers on the impact of flipped learning on teachers' role?
3. What are the perceptions of teachers on the challenges facing the implementation of the flipped learning?
4. Are there significant differences at the level ($\alpha=0.05$) in the teachers' perceptions on flipped learning model related to: sex, experience and teaching subject?

2. Materials and Methods

In this section, the research design, participants, and data collection instruments will be described.

2.1. Research Method

In order to answer the research questions, descriptive research approach was used and a survey was implemented for descriptive analysis.

2.2. Research Population and Sample

The (126) male and female teachers who had implemented flipped learning in the last two years were contacted and asked to participate in the study.

The study was conducted during the second semester of the academic year 2018/2019. Table (1) shows the demographic characteristics of the participants.

Table 1. Demographic Characteristics of Participants

Variable		%	No.
Sex	Male	42.8	54
	Female	57.2	72
	Total	100	126
Experience	Less than 5 years	46.8	59
	5 years- Under 10	31.7	40
	10 – 15 years	20	25
	15 years and above	1.5	2
	Total	100	126
Subject	Humanities	51.6	65
	Scientific	23	29
	Languages	25.4	32
	Total	100	126

2.3. Data Collection Tool

To answer the research question, the researcher developed a questionnaire based on the literature and previous studies in order to capture teachers' perception of flipped learning. To ensure the validity of the instrument, a panel of (10) faculty members at the Faculty of Education were consulted and the feedback ensured clarity and internal consistency requiring minor changes mainly in respect to the wording of three items and omitting one item. The final version of questionnaire consisted of two parts: the first part collected demographic information about participants regarding: school, sex, experience, teaching subject. The second part consisted of (37) items. The responses to the scale were measured on a four-point Likert scale ranged as follows: 4= strongly agree, 3= agree, 2= disagree, and 1= strongly disagree. The questionnaire consisted of three dimensions including the impact of flipped learning on student learning, the role of the teacher, and challenges face the implementation of flipped learning in Jordanian schools. Additionally, the overall coefficient reliability for the (37) items was (0.91) on Cronbach's alpha. Thus, the questionnaire was considered suitable for the purposes of the current study.

Means, standard deviations, MANOVA, and Scheffe's test were used to answer the research questions.

2.4. Procedure

As flipped learning model is a new and unpopular among teachers in Jordan, private educational governorate in Amman, the capital of Jordan, was contacted in order to identify schools that had experiences with flipped learning implementation. Accordingly, schools in the six educational governorates in Amman were consulted in order to identify teachers who had implemented flipped learning in their teaching. The initial contacts revealed (126) male and female teachers who had implemented flipped learning and they were contacted through their principals and asked to answer the questionnaire.

3. Findings

The current study aimed at examining teachers' perception on flipped learning. In this section, the findings are presented.

3.1. Teachers' Perceptions on the Impact of Flipped Learning on Students' Learning

The first research question was "What are the perceptions of teachers on the impact of flipped learning on students' learning?" To answer the question, means, standard deviations, ranks and levels were calculated as

shown in table (2).

Table (2) shows that, overall, teachers participating in the study gave positive responses of strongly agree and agree to the items about the impact of flipped learning on students' learning. The overall rating for this dimension was high with a mean of (3.01). The ranking of items in this dimension shows that the highest mean (3.33) was for the item "Flipped learning improves student's attention during class time." The second and third items were "Flipped learning improves student's self-confidence coming to class with basic understanding" and "Flipped learning makes learning more enjoyable" with means of (3.31) and (3.25) respectively. On the other hand, the least two items were "I think flipped learning is better than traditional teaching for students" with a mean of (2.62), and "Students benefit from their time outside classes" with a mean of (2.48).

Apparently, items related to improved attention, self-confidence, enjoyment, preparedness, improved achievement, the benefit of active learning, overcoming shyness, flexibility of learning, improved interaction, and various aspects of students' development, all attracted higher rating by teachers. On the other hand, items regarding cooperation, motivation, student centric learning, creativity, higher order thinking, benefiting from time outside classes, all attracted medium rating by teachers.

Table 2. Means, standard deviations, and ranks of responses on the role of flipped learning in student learning (N=126)

Item	Rank	Mean	SD	Level
Flipped learning improves student's attention during class time	1	3.33	.577	High
Flipped learning improves student's self-confidence coming to class with basic understanding	2	3.31	.687	High
Flipped learning makes learning more enjoyable	3	3.25	.592	High
Flipped learning prepares students' mentally for the class	4	3.18	.784	High
Flipped learning can improve students' achievement	5	3.17	.760	High
Students benefit from active learning in the classroom	6	3.14	.807	High
Flipped learning can help overcome students' shyness	7	3.11	.940	High
Flipped learning makes learning more flexible	8	3.09	.704	High
Flipped learning can improve students' interaction in classes	9	3.06	.936	High
Flipped learning enables students' various aspects of development	10	3.03	.758	High
Flipped learning encourages cooperative learning among students	11	2.97	.748	Medium
Flipped learning improves students' motivation to learn	12	2.95	.809	Medium
Flipped learning makes learning more students-centric	13	2.94	.767	Medium
Flipped learning improves students' creativity	14	2.85	.738	Medium
Flipped learning improves students' higher order thinking skills	15	2.80	.693	Medium
I think flipped learning is better than traditional teaching for students	16	2.62	.618	Medium
Students benefit from their time outside classes	17	2.48	.807	Medium
Overall		3.01	.748	High

3.2. Teachers' Perceptions on the Impact of Flipped Learning on Teacher's Role

To answer the second research question, "What are the perceptions of teachers on the impact of flipped learning on teachers' role?" means, standard deviations, ranks and levels were calculated as shown in table (3).

Table (3) shows that overall, teachers participating in the study gave positive responses of strongly agree and agree to the items about flipped learning's impact on teachers' role. The overall level for this dimension was high with a mean of (3.09). The ranking of the items in this dimension shows that the highest item was "Flipped learning helps teachers make better use of class time" with a mean of (3.34). The second item was "Flipped learning enables teachers to follow students' learning beyond classrooms" with a mean of (3.27). The only two items in this dimension with medium level were "Flipped learning enables me to help struggling students" and "Flipped learning makes my job easier" with means of (2.87) and

(2.60) respectively.

3.3. Teachers' Perceptions on challenges Facing the Implementation of Flipped Learning

The third research question was "What are the perceptions of teachers on the challenges facing the implementation of the flipped learning?" To answer this question, means, standard deviations, and ranks of responses are presented in table (4).

In table (4), teachers reported an overall high rating of to the items in the "challenges face the implementation of flipped learning" dimension with a mean of (3.02). The ranking of the items in this dimension shows that the highest mean score was (3.37) for both items "Parents do not have enough knowledge and understanding of flipped learning" and "Students' parent's awareness can influence the implementation of flipped learning." On the other hand, the least item considered as a challenge for flipped learning was "Flipped learning needs more time to prepare learning activities" with a mean of (2.63).

Table 3. Means, standard deviations, and ranks of responses on the "impact of flipped learning on teacher's role" dimension

Item	Rank	Mean	SD	Level
Flipped learning helps teachers make better use of class time	1	3.34	.812	High
Flipped learning enables teachers to follow students' learning beyond classrooms	2	3.27	.833	High
Flipped learning enables better class management	3	3.24	.784	High
Flipped learning saves teachers' efforts (by lecturing) inside the classroom	4	3.22	.828	High
Flipped learning liberates teachers from dull routines	5	3.13	.794	High
Flipped learning improves teacher-student communication	6	3.06	.936	High
Flipped learning enables me to help struggling students	7	2.87	.790	Medium
Flipped learning makes my job easier	8	2.60	.841	Medium
Overall		3.09	0.827	High

Table 4. Means, standard deviations, and ranks of teachers' responses on the "challenges face the implementation of flipped learning"

Item	Rank	Mean	SD	Level
Parents do not have enough knowledge and understanding of flipped learning	1	3.37	.786	High
Parents' awareness can influence the implementation of flipped learning	1	3.37	.786	High
Flipped learning requires teacher preparation programs to prepare teachers	2	3.25	.789	High
School principals have important role in the implementation of flipped learning	3	3.21	.864	High
The internet available does not support the implementation of flipped learning	4	3.17	.827	High
Teachers' traditional thinking hinders the implementation of flipped learning	5	3.01	.764	High
School infrastructure impact the implementation of flipped learning	6	2.83	.989	Medium
Flipped learning needs changes in current regulations and legislations	7	2.75	.777	Medium
The current curricula do not allow for the implementation of flipped learning	8	2.63	.817	Medium
Flipped learning needs more time to prepare learning activities	9	2.63	.817	Medium
Overall		3.02	0.821	High

3.4. Teachers' Perceptions on the Impact of Flipped Learning in Respect to Sex, Experience, and Teaching Subjects

The fourth research question focused on teachers' perceptions on flipped learning considering sex, experience, and teaching subjects.

For the sex variable, means and standard deviations are presented in Table (5) for the three dimensions in the questionnaire (students' learning, teacher's role, and challenges).

Table 5. Means, standard deviations, and ranks of teachers' responses on the "challenges face the implementation of flipped learning"

Dimension	Sex	Mean	SD	N
Student learning	Male	49.07	5.13	54
	Female	52.80	5.34	72
Teacher's role	Male	26.01	3.55	54
	Female	28.41	3.17	72
Challenges	Male	27.68	4.06	54
	Female	31.59	3.59	72
Overall	Male	102.77	10.59	54
	Female	112.81	9.82	72

Table (5) shows mean scores of female and male

teachers' perceptions. Differences appear in all three dimensions of the questionnaire. The overall mean score or female teachers was (112.81) with (9.82) standard deviation while the mean for male teachers was (102.77) with (10.59) standard deviation. Wilks' Lambda was used to test whether the differences are statistically significant (Wilks' Lambda=0.782, F=11.341, p=0.00). The results suggest that the sex variable was significant determinant of teachers' perception on the effectiveness of flipped learning on student learning, teachers' role, and the challenges face flipped learning. In order to test the significance of differences between male and female teachers, Multivariate analysis of variance (MANOVA) was carried out as shown in Table (6).

Table (6) shows significant differences between male and female teachers in their perceptions on flipped learning in all three dimensions of the study. In both dimensions of the study, students' learning and teacher's role, female teachers had a stronger views that flipped learning can improve students' learning and transforms teacher's roles with a significance (p=0.00) between male and female teachers in both dimensions. However, female teachers also had stronger views regarding the challenges face the implementation of flipped learning in Jordanian schools.

Table 6. Means, standard deviations, and ranks of teachers' responses on the "challenges face the implementation of flipped learning"

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
sex	Student Learning	429.653	1	429.653	15.546	.000	.111
	Flipped on Teachers' role	177.463	1	177.463	15.894	.000	.114
	Challenges	472.239	1	472.239	32.623	.000	.208
	Overall	3111.482	1	3111.482	30.128	.000	.195
Error	Student Learning	3426.981	124	27.637			
	Flipped on Teachers' role	1384.481	124	11.165			
	Challenges	1794.968	124	14.476			
	Overall	12805.986	124	103.274			

Table 7. Means and standard deviations of teachers' perceptions on flipped learning in respect to their teaching experience on all three dimensions

Dimension	Experience	Mean	SD	N
Student Learning	Less than 5 years	51.3729	5.32366	59
	5 years- Under 10	51.8500	5.56799	40
	10 – 15 years	49.8889	6.00854	27
	Total	51.2063	5.55455	126
Teacher's role	Less than 5 years	27.9322	3.38793	59
	5 years- Under 10	27.1750	3.60119	40
	10 – 15 years	26.5185	3.67288	27
	Total	27.3889	3.53491	126
Challenges	Less than 5 years	30.2373	4.02723	59
	5 years- Under 10	30.0750	4.17801	40
	10 – 15 years	29.0000	4.86747	27
	Total	29.9206	4.25883	126
Overall	Less than 5 years	109.5424	10.81717	59
	5 years- Under 10	109.1000	10.52177	40
	10 – 15 years	105.4074	13.12150	27
	Total	108.5159	11.28449	126

3.5. Experience Variable

In order to examine teachers' perceptions on flipped learning according to their teaching experiences, means and standard deviations were calculated and presented in table (7).

Table (7) shows the Multivariate tests for teaching experiences variable. The table shows no significant differences between teachers' perceptions on the impact of flipped learning in respect to their teaching experiences (Wilks' Lambda=0.961, F=820, p=555).

3.6. Teaching Subjects Variable

In order to examine teachers' perceptions on flipped learning according to their teaching subjects, means and standard deviations were calculated and presented in table (8).

Table (8) shows apparent differences in the means of teachers' perceptions according to their teaching subjects. In order to examine the significance of the differences, Wilks' Lambda was carried out which revealed statistical differences between teachers on the combined dependent variables (Wilks' Lambda=.908, F=1.99, p=.048). In order to determine to which teachers these differences belong, Multivariate analysis of variance (MANOVA) was used

as shown in Table (9).

Table 8. Means and standard deviations of teachers' perceptions on flipped learning in respect to their teaching subjects variable on all three dimensions

Dimension	Teaching subject	Mean	SD	N
Student Learning	Humanities	51.49	5.565	65
	Scientific	50.62	5.627	29
	Languages	51.15	5.600	32
	Total	51.20	5.554	126
Teacher's role	Humanities	27.60	3.556	65
	Scientific	25.75	3.291	29
	Languages	28.43	3.281	32
	Total	27.38	3.534	126
Challenges	Humanities	30.30	4.153	65
	Scientific	28.58	4.701	29
	Languages	30.34	3.923	32
	Total	29.92	4.258	126
Overall	Humanities	109.40	11.413	65
	Scientific	104.96	10.171	29
	Languages	109.93	11.642	32
	Total	108.51	11.284	126

Table 9. MANOVA for differences between teachers' perceptions on flipped learning in respect to their teaching subjects

Source	Dependent Variable	Sum of Squares	Mean Square	F	Sig.	Partial Eta Squared
Teaching subject	Student learning	15.342	7.671	.246	.783	.004
	Teacher's role	115.159	57.580	4.895	.009	.074
	Challenges	67.107	33.553	1.876	.158	.030
Error	Student learning	3841.292	123	31.230		
	Teacher's role	1446.785	123	11.762		
	Challenges	2200.099	123	17.887		
	Total	15436.441	123	125.500		

Table 10. MANOVA for differences between teachers' perceptions on flipped learning in respect to their teaching subjects

Dependent Variables	Teaching Subject		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
	(I)	(J)				Lower Bound	Upper Bound
Teacher's role	Humanities	Scientific	1.8414	.76587	.059	-.0564-	3.7391
		Languages	-.8375-	.74063	.529	-2.6727-	.9977
	Scientific	Languages	-2.6789-*	.87931	.011	-4.8577-	-.5001-

Table (9) shows no significant differences between the two dimensions of the questionnaire regarding the teaching subject; "students' learning" ($p=.783$) and "challenges face the implementation of flipped learning" ($p=.158$). However, the impact of flipped learning on the dimension "teacher's role" showed significant differences ($p= 0.009$). In order to examine to which subject the differences belong, Scheffe's test was used, and Table (10) shows the results.

Table (10), revealed significance differences between language teachers and scientific subjects teachers ($p=0.011$) in the "Teachers role" dimension. This suggests that languages teachers have stronger perception that flipped learning influences their role as teachers than science teachers. However, the results showed no significant differences between science teachers and humanities teachers.

4. Discussion

In this section, findings of the study are discussed in light of previous literature and practices.

4.1. Flipped Learning on Student Learning

Teachers believed in the potential of flipped learning to improve student's engagement and self-confidence during class time because they come to class with basic understanding of concepts allowing them to be active learners and have self-confidence to participate in learning activities. This confirms findings from previous studies [4, 40, 41] which pointed to the positive impact of flipped learning on students' motivation to learn and engagement because they come to the class mentally prepared with basic understanding of new concepts.

On the other hand, as flipped learning was new to teachers, they were still uncertain whether flipped learning is better than traditional teaching for students. However, this could be understood in light of the uncertainty that accompany newly implemented initiatives and, according to [28], the impact of the support teachers receive from school culture which influences their perceptions. However, flipped learning was still a new concept implemented voluntarily within a traditional setting that has been dominant for a long time; therefore, traditional teaching practices still overshadow new ones.

The impact of flipped learning on students' attention, self-confidence, enjoyment, preparedness, achievement, active learning, shyness, flexibility of learning, interaction, and students' development, were favored by teachers compared with issues regarding the impact of flipped learning on cooperation, motivation, student centric learning, creativity, higher order thinking skills, and time outside classes. Apparently, while teachers were able to observe the impact of flipped learning on students'

attention, enjoyment, achievement, and behavior in the classrooms, it was hard to notice its impact on issues such as creativity, higher order thinking in a short period.

In flipped learning, students are expected to invest some of their time before they attend the class to benefit from what was made available for them online by the teacher, so they can come prepared and ready for the related learning activities and tasks designed by the teacher. However, teachers were uncertain of students' proper use of the materials online. This can be understood considering that the flipped learning was not institutionalized yet, so, teachers did not have access to sophisticated and smart digital tools to track and follow students' online activities. The availability of such tools may benefit both teachers and students in this respect.

4.2. Flipped Learning on Teachers' Role

Overall, teachers believed that flipped learning model impacts teachers' role in teaching and learning. The only two items in this dimension with medium level were "Flipped learning enables me to help struggling students" and "Flipped learning makes my job easier."

Innovative teachers who are willing to take the challenge and adopt new teaching strategies may spend extra effort and time into their new teaching practices. For other teacher who might be reluctant to adopt new initiatives, this must be clarified not to feel frustrated and overwhelmed.

In flipped learning, teachers shift lecturing from the group space in classrooms to the individual space at home, inevitably, fundamental transformation to their traditional role occurs. Class time is the part of flipped learning where teachers' role is transformed and freed from lecturing. The saved class time helps teachers to perform their fundamental and valuable role during the class becoming the guide, monitor, and facilitator of student learning helping them to make sense of what they learn prior to the class time [40].

4.3. Challenges Facing the Implementation of Flipped Learning

Overall, teachers believed the implementation of flipped learning faces challenges. The two main items in this dimension were related to parents' role and awareness. This indicates that the culture on adopting innovative ideas can face serious challenges from the society including parents. According to [42] and [43], engaging parents in children's learning has strong influence on student achievement, engagement, motivation and school completion. Parents' crucial role requires special efforts to explain flipped learning to them and clarify the role of teachers and students to them in order to play a positive and supportive role especially when students are at home. The least item considered as a challenge for flipped

learning was the time needed to prepare learning activities. Teachers involved in flipped learning are usually the innovators who always search for new ideas and innovations to improve their practices [25]. These teachers voluntarily put extra time and efforts needed to improve their practices.

4.4. Teachers' Perceptions in Respect to Their Sex, Experience and Teaching Subject

Female teachers had stronger perception than male teachers that flipped learning can affect student's learning and transform teacher's role in education. Female teachers also showed stronger views that the implementation of flipped learning faces challenges more than male teachers, which might be due to home responsibilities and commitments that often collide with the extra time needed for preparing learning activities. Traditionally, in Jordan and the Arab World, females are mainly responsible for home duties. Thus, adopting flipped learning can place extra burden on female teachers in particular.

Language teachers also had stronger perception regarding the implementation of flipped learning can influence teacher role than science teachers. This might be due to the role's language teachers might play outside classrooms through online activities designed for students. Considering the wealth of language resources available online, language teachers might find themselves required to guide students through the resources in order to benefit from what is already available which strengthens students' language skills.

5. Conclusions

Teachers are fundamental to adopting and implementing educational initiatives. What teachers perceive and practice should be central to any planning for the future of education. The current study aimed to investigate Jordanian teachers' perceptions on adopting and implementing flipped learning model in Jordanian schools and its impact on students' learning, teacher's role, and the perceived challenges.

The findings showed differences between male and female teachers' perceptions on flipped learning. Despite the fact that the percentage of female teachers who had implemented flipped learning was more than male teachers, they might feel overwhelmed by the extra time and efforts needed for adopting new initiatives added to responsibilities and commitments they already have at home. In addition, the findings pointed to the fact that social factors, including parents, should be considered in implementing initiatives like flipped learning model, because they can influence its implementation. So, they must be onboard with teachers and students.

Based on the findings, it is recommended that more

research is needed to capture teachers' voices regarding similar educational issues. In addition, it is recommended to conduct further qualitative studies on flipped learning implementation in order to have a closer look into its implementation. In addition, supporting and encouraging teachers who are willing to take risks and try new paths to their practices can open new possibilities for education.

REFERENCES

- [1] Wake, J.D., O. Dysthe, and S. Mjelstad, *New and Changing Teacher's roles in Higher Education in a Digital Age*. Educational Technology & Society, 2007. 10(1): p. 40-51.
- [2] Laurillard, D., *Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology*. 2012, New York: Routledge.
- [3] Buil-Fabregá, M., et al., *Flipped Classroom as an Active Learning: Methodology in Sustainable Development Curricula*. Sustainability, 2019. 11(17).
- [4] Abeysekera, L. and P. Dawson, *Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research*. Higher Education Research & Development, 2015. 34(1): p. 1-14.
- [5] Bergmann, J. and A. Sams, *Flip your classroom: reach every student in every class every day*. 2012, Washington, DC: ISTE.
- [6] Bergmann, J., J. Overmyer, and B. Wilie *The Flipped Class: Myths vs. Reality*. 2013. 2013.
- [7] Mazur, E., *Farewell, Lecture?* SCIENCE Magazine, 2009. 323: p. 50-51.
- [8] Mazur, A.D., B. Brown, and M. Jacobsen, *Learning Designs Using Flipped Classroom Instruction*. Canadian Journal of Learning & Technology, 2015. 41(2).
- [9] AlJarrah, A., M.K. Thomas, and M. Shehab, *Investigating temporal access in a flipped classroom: procrastination persists*. International Journal of Educational Technology in Higher Education, 2018. 15(1): p. 1-18.
- [10] Fadol, Y., H. Aldamen, and S. Saadullah, *A comparative analysis of flipped, online and traditional teaching: A case of female Middle Eastern management students*. The International Journal of Management Education, 2018. 16(2): p. 266-280.
- [11] Bristol, T.J., *Flipping the Classroom*. Teaching and Learning in Nursing, 2014. 9(1): p. 43-46.
- [12] Goodwin, B. and K. Miller, *Evidence on Flipped Classrooms Is Still Coming In*. Educational Leadership, 2013. March 2013: p. 27-80.
- [13] Findlay-Thompson, S. and P. Mombourquette, *Evaluation of A Flipped Classroom in an Undergraduate Business Course*. Global Conference on Business and Finance Proceedings, 2013. 8(2): p. 138-145.
- [14] Herreid, C.F. and N.A. Schiller, *Case Studies and the*

- Flipped Classroom. *Journal of College Science Teaching* 2013. 42(5): p. 62-66.
- [15] Abuhmaid, A., The Impact of Using Flipped Learning Strategy on Students' Motivation for Learning, in 10th annual International Conference of Education, Research and Innovation. 2017: Seville (Spain).
- [16] Mooring, S.R., C.E. Mitchell, and N.L. Burrows, Evaluation of a Flipped, Large-Enrollment Organic Chemistry Course on Student Attitude and Achievement. *Chemical Education*, 2016. 93(12).
- [17] Nielsen, P.L., N.W. Bean, and R.A.A. Larsen, The Impact of a Flipped Classroom Model of Learning On a Large Undergraduate Statistics Class *Statistics Education Research Journal*, 2018. 17(1): p. 121-140.
- [18] Butt, A., Student views on the use of a flipped classroom approach: evidence from Australia. *Business Education & Accreditation*, 2014. 6(1): p. 33-43.
- [19] Mayer, R.E., Incorporating motivation into multimedia learning. *Learning and Instruction*, 2014. 29: p. 171-173.
- [20] Putman, M. and C. Walker, Motivating Children to Read and Write: Using informal learning environments as contexts for literacy instruction. *Journal of Research in Childhood Education*, 2010. 24(2): p. 140-151.
- [21] Richardson, M. and C. Abraham, Conscientiousness and Achievement Motivation Predict Performance. *European Journal of Personality*, 2009. 23(7): p. 589-605.
- [22] Richardson, M. and C. Abraham, Psychological Correlates of University Students' Academic Performance: A Systematic Review and Meta-Analysis. *Psychological Bulletin*, 2012. 138(2): p. 353-387.
- [23] Ryan, R.M. and E.L. Deci, Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, 2000. 54: p. 54-67.
- [24] Sansone, C. and J.M. Harackiewicz, Looking beyond Rewards: The Problem and Promise of Intrinsic Motivation, in *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*, C. Sansone and J.M. Harackiewicz, Editors. 2000, Academic Press: San Diego. p. 1-48.
- [25] Rogers, E.M., *Diffusion of Innovations*. 5th ed. 2003, New York: Free Press.
- [26] Cochran-Smith, M., Taking Stock in 2004: Teacher Education in Dangerous Times. *Journal of Teacher Education*, 2004. 55(1): p. 3-7.
- [27] Townsend, T. and R. Bates, Teacher Education in a New Millennium: Pressures and Possibilities, in *Handbook of Teacher Education: Globalization, Standards and Professionalism in Times of Change*, T. Townsend and R. Bates, Editors. 2007, Springer: Dordrecht, The Netherlands. p. 3-24.
- [28] Deemer, S.A., Classroom goal orientation in high school classrooms: revealing links between teacher beliefs and classroom environments. *Educational Research*, 2004. 46(1): p. 73-90.
- [29] Abuhmaid, A., ICT Integration Across Education Systems: The experience of Jordan in educational reform. 2009, Saarbrücken, Germany: VDM Verlag Dr. Müller.
- [30] Tondeur, J., et al., Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational Technology Research and Development*, 2017. 65(3): p. 555-575.
- [31] Donnell, L.A. and M. Gettinger, Elementary school teachers' acceptability of school reform: Contribution of belief congruence, self-efficacy, and professional development. *Teaching and Teacher Education*, 2015. 51: p. 47-57.
- [32] Zhao, Y., What Teachers Need to Know About Technology: Framing the Question, in *What should teachers know about Technology: Perspectives and Practices*, Y. Zhao, Editor. 2003, Information Age Publishing Inc.: Greenwich.
- [33] Veen, W., How Teachers Use Computers in Instructional Practice- four case studies in a Dutch secondary school. *Computers & Education*, 1993. 21(1/2): p. 1-8.
- [34] Higgins, S. and D. Moseley, Teachers' Thinking about Information and Communications Technology and Learning: beliefs and outcomes. *Teacher Development*, 2001. 5(2): p. 191-209.
- [35] Davis, H.A., Conceptualizing the Role and Influence of Student-Teacher Relationships on Children's Social and Cognitive Development. *Educational Psychologist*, 2003. 38(4): p. 207-234.
- [36] Lai, C., Y. Yeung, and J. Hu, University student and teacher perceptions of teacher's roles in promoting autonomous language learning with technology outside the classroom. *Computer Assisted Language Learning*, 2015. 29(4): p. 703-723.
- [37] Regan, K., et al., Teacher perceptions of integrating technology in writing. *Technology, Pedagogy and Education* 2019. 28(1): p. 1-19.
- [38] Kader, H.B.A., Teacher perception on the potential of flipped classroom pedagogical practice in enhancing classroom interactions in Singapore primary classrooms. *Learning: Research and Practice*, 2019: p. 1-13.
- [39] Brown, G., Improving education in public schools: innovative teachers to the rescue. *System Dynamics Review*, 1992. 8(1): p. 83-89.
- [40] Jamaludin, R. and Z.M. Osman, The Use of a Flipped Classroom to Enhance Engagement and Promote Active Learning *Journal of Education and Practice*, 2014. 5(2): p. 124-131.
- [41] Roehl, A., S.L. Reddy, and G.J. Shannon, The flipped classroom: an opportunity to engage millennial students through active learning strategies. 2013. 105(2): p. 44-49.
- [42] Bond, M., Flipped learning and parent engagement in secondary schools: A South Australian case study. *British Journal of Educational Technology*, 2019. 0(0).
- [43] Stewart, E.B., School Structural Characteristics, Student Effort, Peer Associations, and Parental Involvement The Influence of School- and Individual-Level Factors on Academic Achievement. *Education and Urban Society*, 2008. 40(2): p. 179-204.