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Investigating the Appropriateness of a Course Evaluation Model: Preservice Teachers' Flipped Learning Experience

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Abstract

Parlett and Hamilton's (1972) Illuminative Evaluation Model (IEM) was adopted to research course evaluation in flipped learning environments. An integrated data set, including teaching videos, interviews from 17 preservice teachers, and course materials, was collected and analyzed in an educational sciences course. Both quantitative and qualitative data showed that this model, within its learning milieu and instructional systems aspects, had the potential to be a suitable method for instructors to evaluate the quality of their flipped courses. These relationships between the learning milieu and instructional systems provide evidence of the complexity of evaluation. This study demonstrates how the IEM helps uncover the design of a flipped educational sciences course and offers a suitable model for flipped course evaluation. Finally, the implications of this study for general instructional design are discussed.

Keywords: course evaluation; higher education; flipped learning; interpretive paradigm; illuminative evaluation model

About the Article

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Introduction

Originating as a coined term in 2012, the "flipped classroom" model began to gain global recognition as the "flipped learning" education model by/since 2016, particularly with the rise of evidence-based educational approaches ("The Flipped Learning Global Initiative", 2025). As an innovative educational approach, it gives instructors some opportunities to make students at the center and to provide interactive short videos, AI-supported materials, adaptive learning platforms, activities such as discussions, exercises, assignments, and guided problem-solving processes. This approach fosters autonomous learning through online content interaction, enhanced student-student and student-teacher collaboration, active engagement with tasks, learner responsibility, unrestricted access to materials (e.g., asynchronous instructor videos), and self-paced use of instructional resources embedded in learning management systems (Şahin & Fell Kurban, 2016; Şahin & Fell Kurban, 2024).

Mathematics plays a fundamental role in everyday life and is essential for developing logical reasoning, problem-solving skills, and analytical thinking (Vinner, 2011). However, due to its inherently abstract nature, mathematics often poses difficulties for students at all educational levels compared to other subjects. In Türkiye, where those students have performed consistently under the OECD average in mathematical knowledge and skills (e.g., problem solving, critical thinking and reasoning) on The Programme for International Student Assessment (PISA) (OECD 2023), the flipped learning model can offer a promising approach by shifting the focus to active, in-class engagement and personalized interpersonal support. Recent empirical studies and meta-analysis studies (e.g., Cheng et al., 2018; Jang & Kim, 2020; Jin et al., 2023), particularly covered practices in mathematics teaching and learning showed that the benefits are especially visible in terms of affective and interpersonal outcomes—indicating that students feel more engaged, motivated, and confident when learning in flipped environments. However, when narrowed down to specific subject areas, mathematics tends to show smaller cognitive gains compared to other fields, suggesting that implementation strategy plays a critical role. It can provide a channel for students with the opportunity to review abstract concepts at their own pace outside the classroom and engage in guided problem-solving during class, where teacher feedback is immediate. Methodologically, successful flipped learning in mathematics typically includes: pre-class instructional videos or readings, in-class interactive problem-solving or group activities, and post-class assessments such as quizzes or exercises.

In summary, while flipped learning is not a one-size-fits-all solution, it offers notable improvements in engagement, confidence, and conceptual understanding, especially when carefully designed to address the unique challenges of teaching abstract subjects like mathematics.

Present Research

The purpose of the current study was to investigate the appropriateness of the Illuminative Evaluation Model (Parlett & Hamilton, 1972) in the field of Education Sciences, specifically for a course designed using the flipped learning method of instruction as described by Bergmann and Sams (2012).

Research Question 1: To what extent and in what ways did the Illuminative Evaluation Model serve to evaluate a flipped educational sciences course?

Research Question 2: How do students describe their experiences in the flipped educational sciences course through an illuminative evaluation?

Method

The Participants of the Current Study

The population of the study consisted of all students enrolled in the department of elementary mathematics education program at the university. As the program was launched during the early years of the university, the total number of students was relatively small, with only 17 students registered at the time of the study. Therefore, instead of selecting a sample, the entire population was included in the research. We included 17 first-year pre-service teachers (n = 16 females and n = 1 male) majoring in elementary mathematics education. As flipped learning was the university's medium of instruction, all participants gained experience in engaging this method while taking departmental (e.g., Calculus, Introduction to Mathematics Teaching) and elective (e.g., Introduction to University Life) courses. All students gave consent to participate in the study for four weeks.

Author Positionality

This study involved researchers with diverse but complementary expertise to conduct a multi-faceted analysis of the integrated data set (i.e., observations, field notes, interviews, and course materials) collected from the students over four weeks. The first author's expertise is in mathematics curriculum and qualitative research, the second author's is in mathematics assessment and quantitative research, and the third author's is in teaching and learning in flipped classroom settings. The comprehensive expertise of the research team enabled us to examine the data from the perspective of IEM holistically and in-depth. In discussions about the data and framing of the article, all team members drew on their lived experiences with flipped learning and perspectives from the University within School (see Birgili et al., 2018 for detail) to represent the data as comprehensively as possible.

In Step 2, a detailed search was conducted with keywords to ascertain if any of the studies included the term "flipped learning" and/or "flipped classroom" either in the main text

or in the reference list. As none of the studies involved such keywords, the five most frequently used models were taken into consideration based on the inclusion and exclusion criteria used in the preliminary step: (1) Responsive Evaluation (Stake, 1975) (n = 46), (2) Empowerment Evaluation (Fetterman, 1993) (n = 37), (3) Countenance Framework (Stake, 1967) (n = 32), (4) Fourth Generation Evaluation Model (Guba and Lincoln, 1989) (n = 29), and (5) Illuminative Evaluation Model (Parlett and Hamilton, 1972) (n = 18). In Step 3, these five models were explored in terms of their potential for evaluating courses, especially under the umbrella of the internationally recognized global elements for flipped learning. This process revealed that Parlett and Hamilton's (1972) Illuminative Evaluation Model had the greatest potential for use in the present study for two reasons: (1) it concentrates on the information-gathering (e.g., interviews, observations, documentary information) rather than on the decision-making component of evaluation, and (2) it allows the evaluator to focus on processes within the classroom rather than on outcomes.

Table 1.

Inclusion and Exclusion Criteria for Potential Course Evaluation Models

Inclusion Criteria	Exclusion Criteria
Interpretivist paradigm	Positivist paradigm
Mostly qualitative data sources and methods	Mostly quantitative data sources and methods
Internal stakeholders	External stakeholders
Formative	Summative
Students are the main stakeholders	External bodies are the main stakeholders
Educators are the evaluators	External bodies are the evaluators
Data sources are broad and varied	Data sources are narrow
Deliverables involve adaptations to future iterations of the course	Deliverables do not involve adaptations to future iterations of the course
Method has been successfully used as a course evaluation method in another research	Method has not been used as a course evaluation method in another research

Data Sources

The author team included three faculty members dedicated to the flipped learning method in education courses. The first author, a Ph.D. candidate in Educational Sciences,

acted as a non-participant observer, documenting classroom interactions, field notes, and focus group interviews. The second author, an expert in Secondary Science and Mathematics Education, brought 19 years of research experience, three years of flipped classroom teaching, and expertise in statistical data analysis. Both contributed to interpreting blended learning interactions. The third author, the Turkish Education and School System [TESSM] course instructor and director of the Center for Research and Best Practices in Learning and Teaching at MEF University, developed training sessions to enhance student performance and guided professional development for active, innovative learning. She also ensured quality assurance for flipped learning design and delivery.

Classroom Observations

A total of eight TESSM classes were recorded, focusing on the instructor's activities and students' involvement during the lessons. Each video lasted for about 90 minutes. All instructors and student dialogue were subsequently transcribed. These transcriptions aimed to examine the instructor's enactment (e.g., flipped activities) and students' interactions (e.g., production and use of texts/concepts from online flipped videos). Observation of an instructor's teaching practice is vital to access their knowledge of flipped learning, since it is most apparent in action; as such, Parlett and Hamilton named it the learning milieu. Parlett and Hamilton asserted that observations aim to uncover these actions (i.e., interpersonal relationships). (See Figure 1 for a video recording.)

Figure 1.

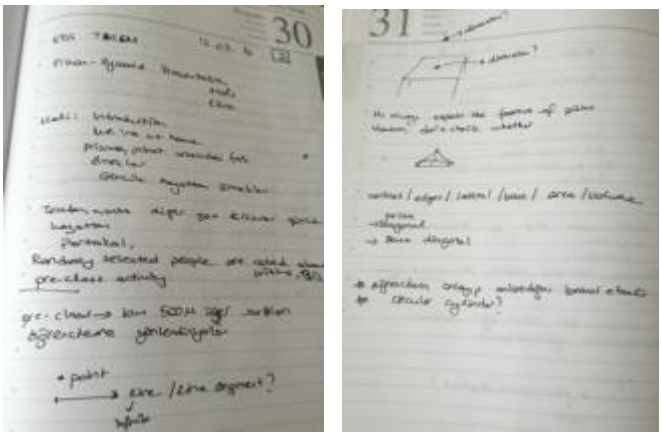
Example of a video recording

Field Notes

Along with the observations, field notes were written by the first author with the aim of critically reflecting upon her experiences in the classroom to proceed to higher levels of analysis and interpretation (Miles and Huberman, 1994). On a practical level, her status as an outsider provided informal knowledge about the flipped classroom environment, which stimulated greater depth of discussion concerning the instructor-student and student-student interactions. Such knowledge also permitted the first author to participate more readily in the flipped activities and reactions being observed. (see Figure 2 for a field note)

Figure 2.

Example of Field Notes



Student Interviews

A focus group interview with two groups—Group 1 (n = 8) and Group 2 (n = 8)—was conducted for about 40 minutes after observing the TESSM classes for four weeks. Students were randomly assigned to the groups, following the criterion that an ideal group size is 8 to 10 participants (Krueger and Casey, 2014). Since one student was not willing to participate in an interview, she was not involved in any of the groups. The students were expected to provide holistic reflections on their flipped learning experience during the semester. The interview aimed to understand (1) the difficulties they encountered in flipped learning, (2) how the instructor attempted to understand their learning difficulties, and (3) their general and specific views on the impact of flipped learning. Analyzing students' perceptions provided unique insights into the flipped learning process as experienced by different student groups.

Course Materials

The course materials, including the syllabus, handouts, activity sheets, and assessments were analyzed. This inspection aimed to understand the pedagogical assumptions, which had the potential to highlight the instructional systems aspect of IEM. All relevant teaching and learning materials related to the instructional systems, that is, flipped learning materials, enabled us to gain insight into what flipped learning in an educational sciences course entails and how it operates. In the case of TESSM, the documents constituting the instructional system also included the online pre-videos that students view before attending class.***Data Analysis***

During the data collection process, the first author was assigned the role of evaluator (i.e., observer-researcher), and the third author was assigned the role of instructor (i.e., teacher-researcher). The data were analyzed in relation to two aspects of IEM: learning milieu (Phases 1 and 2) and instructional systems (Phase 3), including the following three phases:

Phase 1: Analysis of lesson observations. The learning milieu was assessed through a non-participant observation conducted in a natural classroom setting. All observations were video-recorded over a two-week period, with each session lasting 8 hours. The recordings of all the flipped lessons were transcribed verbatim for data analysis. The first and second researchers of the study watched all the lessons along with the transcribed texts to identify teaching moments that reflected an innovative classroom environment design. This design aligns with the principles of flipped learning (i.e., students' use of self-regulation strategies). The data were coded independently using Darst et al.'s (1989) framework (see Table 2). To produce an accurate reflection of the events that occurred in the flipped environment, the teaching and learning processes in the videos were divided into 30-second segments, the shortest timespan deemed meaningful for analyzing teaching-learning pattern changes (van der Mars, 1989) (see Figure 3 for analysis of time segments). This enabled us to answer questions of how many, how often, and how much, as we tended to describe 'what' rather than 'how well' a student or instructor was doing. Such quantitative descriptions of flipping – (behaviors) – most typically involved measurements of time or frequency of events. For any inconsistencies between the two researchers, the third researcher closely reviewed the corresponding lesson transcripts and interview texts to make changes where appropriate. The identified learning milieus are reported in the results section and received consent from all three authors.

Figure 3.

Example of Analysis of Time Segments Aligned with the Frequencies of Subcategories

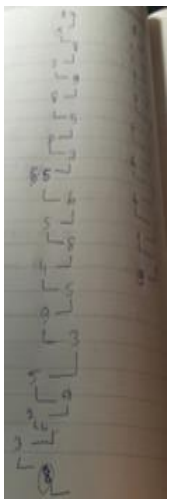


Table 2.

Segments of Analysis of Lesson Observation

Category	Sub-category	Meaning
Teacher Talk Indirect Influence: This environment increases student participation and maximizes freedom of students' response and action.	Accepts feeling (1)	The teacher accepts and clarifies the feeling tone of students in a nonthreatening manner. Feelings may be positive or negative.
	Praises or encourages (2)	The teacher praises or encourages students' actions and behavior.
	Accepts or uses ideas of students (3)	The teacher clarifies, builds, or develops ideas suggested by the student.
	Asks questions (4)	The teacher asks questions about content or procedure with the intent that students answer.
Teacher Talk Direct Influence: This environment increases active control of the teacher and restricts the freedom of students' response.	Lectures (5)	The teacher gives facts or opinions about content or procedures, expresses their own ideas and asks rhetorical questions.
	Gives direction (6)	The teacher gives directions, commands, or orders with which the student is expected to comply.
	Criticizes or justifies authority (7)	The teacher makes statements intended to change student behavior from non-acceptable to acceptable.
Student Talk: This environment provides a check on freedom of student action.	Student talk-responds (8)	Student talk in response to teacher. The teacher initiates the contact and solicits the student's response.
	Student talk-initiates (9)	Students initiate talk.
Silence and Confusion: Category used when the observer cannot determine who is talking or when no one is talking.	Silence and confusion (10)	Pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

Phase 2: Triangulation of interview data. Data from 40-minute, semi-structured focus group interviews were analyzed to confirm the roles of instructors and students in a learner-centered flipped classroom environment identified in Phase 1. Sample questions and prompts are in Appendix A. The first and second researchers separately examined preservice teachers' perceptions, focusing on how flipped learning strategies shaped their learning, influenced their experiences, and could be improved. Thematic analysis was used to code the data, transforming participant statements into emergent themes by identifying patterns and grouping similar ideas (Smith & Osborn, 2003; Patton, 2002). Students' perceptions about course materials, methods, and assessments were categorized as positive (+), neutral (*), negative (-), or counterargument (&), with Table 3 illustrating examples and comments.

Table 3.

Example of Data Analysis Chart used for Interviews

	Utterance	Symbols	Comments
FGI1	Student 4 (S4): '…Not for every course but for some it would be better to have a small handbook. For instance, in Geometry Course the instructor may give a paper and when we see the English terms in that paper it becomes very useful. For the TESSM course we analyzed the curriculum and the schema, but if **a document** had been given, it would have been more permanent…'	-	quality of the course in terms of course material provided in flipped learning environment
FGI1	Student 2 (S2): 'Actually there was no specific environment. **We learned where we are**. We went to [XXX], we went out for homework. We interviewed people about the subject. These are also adding something to us. You're learning people's point of view. Not only in class'.	+	quality of the course in terms of teaching method
FGI1	Student 1 (S1): 'It's learning when I do everything I've learned. When I watched the video, I did not have much of a contribution to it when I solved **the tests**. For me, it contributes even more to active learning in the classroom environment'.	-	quality of the course in terms of assessment

Phase 3: Document analysis. Based on the identified classroom interactions and student perceptions in the first two phases, we sought descriptive information about aspects of the course, such as the teaching approach, assessment types, and teaching methods. The course materials, such as the syllabus, handouts, assessments, and teaching materials, along with evidence from interviews, were then used to outline the paths representing the flipped learning sequences between the aspects (i.e., learning milieu and instructional systems). For each unit of the course content, written documents,

assigned readings, and other prepared activities were examined to assess alignment with learning outcomes. Documents archived in the course content related to in-class activities, as well as the learning and teaching process, were analyzed to determine whether they were effectively aligned with the course's learning outcomes. Therefore, we created a matrix to tabulate the course content, use of tools, and learning outcomes. Finally, we analyzed the documents to determine whether the resources, videos, readings, and activities provided each week by the instructor corresponded to the aims and outcomes. Documents were mapped in a chart against each outcome so that missing elements could be illuminated.

Results

Phase 1. Observations

Turning first to the observation data, results revealed that flipped classes consisted of the following activities: lectures (23.68%); student-talk responses (18.42%); use of student ideas (15.79%); student-initiated talk (10.53%); giving directions (10.53%); accepting feelings (7.90%); praising or encouraging (7.90%); and asking questions (5.26%). Criticism or justification of authority did not occur. The percentage of student-talk in response to the teacher was considerably high, indicating that the instructor communicated effectively with students throughout the teaching and learning process. This provided a flexible classroom environment in which students could enthusiastically engage in in-class activities. In summary, teacher talk involving indirect influence—which encourages freedom of student response and action—was relatively high (36.85%) compared to teacher talk involving direct influence, which limits student freedom due to active teacher control (34.21%); student talk, which allows checks on student freedom (28.95%); and silence or confusion, where the observer could not determine who was speaking or when no one was speaking (0%).

Phase 2. Interviews

Analysis of the focus group interview (FGI) data revealed seven themes (see Table 4). Preservice teachers viewed flipped learning as an active approach emphasizing group work and in-class activities. While they found it particularly effective for verbal courses (e.g., linguistics, psychology), they considered it less suitable for mathematics. Participants appreciated the immediate feedback from the instructor, comparative insights into education systems, and exposure to theoretical knowledge. They highlighted the need for supplementary materials such as handouts, course books, and technological tools. Benefits included collaborative group work and adapting to changes in Turkish educational system, though connectivity issues and limited formative assessments (e.g., fill-in-the-blank questions) posed challenges. While they learned to record flipped videos, they noted a lack of training in preparing mathematics lesson plans.

Table 4.

The Categories from the FGI

FGI Main Question	Themes	Categories
Students' perceptions on materials, teaching methods, and assessment procedures of the course	Definition of flipped learning and main features	1.1. Group working and in-class activity 1.2. Use of resources by the students 1.3. Teacher as facilitator
	Effectiveness in verbal lessons	2.1. Active and student-centered approach 2.2. Not traditional teaching of subjects 2.3. Gain attention
	Effectiveness of TESSM	3.1. Exciting 3.2. Comparison between Türkiye and abroad 3.3. Immediate feedback by the teacher 3.4. Planned course 3.5. Guest speakers
	The need of course tools	4.1. Computer-based applications 4.2. Need of handout or books
	Learning environments	5.1. Informal learning environments 5.2. Flexible and incentive to do research
	Advantages and disadvantages	6.1. Collaborative group working 6.2. Fill in the blank assignments 6.3. Technological problems
	Relation between TESSM and flipped learning in maths education	7.1. Being adaptable to change in education system 7.2. Learning how to create a video rather than lesson planning

Since the students were regularly engaged in an active, student-centered process as required in a flipped classroom, the results from the FGIs indicated that they perceived flipped learning as an appropriate instructional approach for both teaching and learning in the TESSM course. More specifically, students identified flipped learning as an instructional method that brings their attention to the content of the course. "For instance, in our TESSM course it [usage of method] was really good. Both online activities, in-class and out-of-class… it was student-focused…" (S1 FGI1); "I've always enjoyed… the lessons were more flexible" (S2 FGI1).

Much positive feedback came out of the FGIs. It emerged that the students liked that the course was carefully planned and unfolded throughout the semester in a systematic fashion (S15 FGI2). As an illustration, S15 FGI2 stated: "Many courses are unplanned

except this one [TESSM]. I could see the pre-class activity of the sixth week from the very beginning of the first week... We could see what we were supposed to do. This careful planning made us very comfortable and at the same time informed us." Students also reported that their attention was captured by the digital media activities, apps, and embedded links to course content on the learning management system (LMS) (S11 and S13, FGI2). In terms of teaching methods, the students emphasized that they gained satisfaction from the flipped method (all students from FGI1 and FGI2). For instance, S8 FGI1 said "There was as much group work as was possible." And S9 FGI1 added "It was totally student-oriented, and we always did something". In addition, S4 FGI1 explained how they were given opportunities to overcome prejudices and fears of working in groups, expressing "I've never liked group work. I thought if I could not match the people in the group, I would break the group harmony… For example, I learned to share my own thoughts. I was more passive before. I noticed that I could feed myself with the ideas of the others in my group. I was more motivated after that." The students expressed that they found it useful to be asked to find their own resources and share them in in-class activities so that peer-to-peer learning took place (S5 and S9 FGI1, S10 and S12 FGI2).

Students described the immediate feedback from the instructor as one of the most effective aspects of the course (S1, FGI1, and S10, FGI2). This finding was supported by classroom observations and video recordings, which showed that after students' discussions and behaviors related to the TESSM, the instructor both encouraged their actions and helped them clarify and develop their ideas by providing immediate feedback. While the students were doing a presentation or engaged in cooperative group work, for example, while they were conducting a SWOT analysis, the instructor always observed them carefully and interjected if needed. S4 from FGI1 said "Actually, during in-class activities, she [the instructor] always tests us secretly. If she realizes any information on the material, or classroom wall was wrong, she kindly points it out." In addition, students had positive views towards the active, student-centered instruction and expressed that the flexible, informal learning environment helped them to achieve the learning outcomes (S1, S2, S4, S5 FGI1; S10 FGI2). There is therefore evidence triangulated across the classroom observations and the FGIs that illuminates that the significance of the flipping on the TESSM came from providing the students with freedom of thought, freedom of action, and an expectation of collaborative learning and sharing.

However, it also emerged during the FGIs, that the students had not internalized learning outcome three: Illustrate and explain the organizational structure and management approaches within schools, as well as the roles of each of the stakeholders. The students reflected they could not fully grasp the role of each stakeholder in a school system (all students from FGI1; S11, S13, S15 from FGI2). For example, one of the participants [S15 FGI2] said "I think I learned everything about the Turkish educational system, however, on the other topic [school management], I do not have much idea now. Maybe inspections, or what happens when superintendents come" (S15 in particular, and other students). Hence, their experiences illuminated that the course activities or techniques had not effectively helped them to explain different management approaches in Turkish schools. This meant they had not fully internalized the concepts needed for them to

complete the final assignment where they had to write a reform plan to make changes in a school. When this data was triangulated with the document analysis, it became clear that the documents and activities lacked this learning outcome and that this is an area where the teacher-researcher needs to provide additional support to help students achieve this outcome in future iterations. Students also wanted a concise document containing all the readings, links to videos, and handouts in the LMS (S2, S4, S5, S7, S9 from FGI1; S11, S13, S15 from FGI2). For example, S13 FGI2 stressed, "A book was needed. At the very least, a book called Turkish Education System and School Management could be suggested, and even if we do not process it at least in class, it is an opportunity to reach those achievements at home. I think the only thing missing is that…" and when S4 FGI1 said "Then we can prepare a resource," S7 FGI1 agreed, saying of the resources "I think it's in the air. I do not know, it is due to our habit, but I want the written one to be in front of us. I wish it could be in our hands…" Finally, students commented that the pre-class quiz questions asked in the LMS (mostly multiple-choice or fill-in-the blanks) were not cognitively challenging and did not fully require them to show their understanding; they expressed that they thought short-answer questions would test their understanding better (S1 and S3 FGI1; all students from FGI2). This was further explained when S1 FGI1 said "It's learning when I do everything I've learned. When I watched the video, I did not make much of it when I only solved the tests." Furthermore, S15 FGI2 added "Because I was focusing on a word before it [fill in the blanks question], I was only paying attention when they said that word." Moreover, S13 FGI2 said "I would like to write a paragraph." And S10 FGI2 admitted that "Sometimes I asked my friends for the answers while they were doing it. Unfortunately, obvious answers need to be memorized word for word."

Phase 3. Document Analysis

Drawing on the detailed analysis of the course materials, results related to course content from Weeks 1 to 7 showed the following (see Appendix B for all content):

The course content for the entire semester was uploaded to the Blackboard LMS by the instructor from the first week, allowing students to be aware of upcoming content and prepare for each lesson. Additionally, a glossary was shared with students through Blackboard. In Week 1, students watched a welcome video about TESSM, learned the main aims and goals of the course, and were asked to complete pre-class quizzes. Using teaching techniques like the station technique, they learned the concept of timelines, how to create them, and then made a timeline covering the history of the Turkish education system, thus gaining foundational knowledge on the topic. In Week 2, students posed questions regarding the history, development, and reform of the education system to Professor Özcan, dean of the Faculty of Education and guest speaker for the course. They also presented a collaboratively created timeline, aligned with a cooperative learning activity. In Week 4, after studying the British Education Act of 1996 and reviewing a British student's presentation on it, students conducted group presentations. They learned how to prepare presentations on legal principles and compared aspects of the British and Turkish education systems, including curriculum content. In Week 5,

students watched a video on the UK education system and answered questions about its structure in a pre-class quiz. During class, they reviewed the UK system and created diagrams to visually communicate the structure to other groups, drawing these on writable walls at the university. They also gained knowledge about the 4+4+4 Turkish education system. Groups then created a video explaining the Turkish 4+4+4 education system for a selected audience (e.g., students, foreign teachers, new parents at a school), concluding with a critique of the system's advantages and disadvantages. In Week 6, students continued discussing the 4+4+4 system. Each group uploaded their video to share with the class, and in class, they critiqued both the video content and the pros and cons of the Turkish education system they had identified. In Week 7, they studied the administrative hierarchy of the Turkish education system by examining an organogram. Before class, they reviewed UK educational aims and responsibilities, answering questions from that perspective. In class, students worked on creating an organogram for the Turkish Ministry of National Education, discussed the roles of individuals in this structure, and explored the ministry's website (link is blind here) to enhance their understanding.

As a final course objective, students developed their own educational reform plans for the Turkish education system after conducting a SWOT analysis. They identified issues in need of change, gathered supporting evidence, and proposed a reform plan. Overall, the teaching and learning process was active and student-centered. The instructor's role was primarily to guide students as a facilitator, encouraging them to engage with the subject matter, internalize it, and build knowledge of the Turkish education system. By teaching the TESSM concept and serving as a role model for flipping a topic, the instructor demonstrated to the class how to flip their own mathematics unit in an informal learning environment. Toward the end of the semester, students took a final exam to assess whether the learning outcomes had been achieved.

Discussion

Based on the findings from this study, we find evidence that Parlett and Hamilton's IEM was an appropriate model for evaluating a flipped educational sciences course. In Phase 1, observations showed that teacher talk indirect influence—which allows freedom in students' responses and actions—was relatively higher than teacher talk direct influence, which limits students' freedom of response. In Phase 2, student interviews revealed that, despite high engagement and benefits from collaborative learning methods, there was a discrepancy between the instructional method, which relied on the flipped learning approach, and assessment procedures, which were based on traditional, non-cognitively challenging items. Additionally, in Phase 3, course materials documented that there was in-depth course content about education systems and comparative curricula. Nevertheless, there was a gap in the learning outcomes related to the school management content of the course. The course also lacked prepared class documents (i.e., handouts), as noted in Phase 2. This evaluation study, therefore, illuminated these

drawbacks to support future course redesign. The students asserted the need to be assigned relevant textbooks and handouts while actively experiencing flipped learning. The students were also asserted the need to use authentic assessment types by the instructors. They recommended that the instructor prepare flipped videos to be as interactive as possible. For instructors who wish to utilize flipped instructional strategies, these findings suggest that it can be implemented as conceptualized in this study without compromising student performance. However, other impacts of the flipped approach on student perceptions should also be considered.

While the findings of this study offer valuable insights for evaluating other flipped courses, it is essential to consider students' perspectives on the educational sciences course and their experiences with flipped instruction. The interview data indicated that students felt more motivated and were prompted to be more interactive during class, communicating with each other and the instructor regularly throughout the semester. This result we see as both desirable but also expected: freeing up class time from lecturing naturally provides space and time for deeper and more regular discussions. However, in support of what some others (e.g., Ferreri and O'Conner, 2013; Missildine et al., 2013) have found regarding student perceptions of flipped instructional approaches, our data similarly indicate some levels of dissatisfaction—particularly regarding use of class time, static flipped pre-class videos, non-challenging questions during formative assessment and the absence of a coursebook. The majority of students in the flipped class viewed in-class time as effective, important, and efficient—more so than those who expressed concerns about the inefficiencies in the structural and practical aspects of the flipped approach. This was also evident in the findings from the students' micro-teaching assignments, which indicated that the preservice teachers often reverted to traditional teaching methods. This tendency may stem from the fact that most teachers teach in the way they were taught (e.g., Birgili et al., 2016).

Evaluation models provide the means to describe, explain, or judge an evaluation-related matter and a model has an impact when it is adopted, adapted, or developed in a given evaluation context (Arbour, 2020). We have taken this first step given the relatively widespread use of flipped classroom techniques in the educational landscape. It is widely acknowledged that IEM can be used for evaluation in innovative programs (i.e., flipped instruction) as well as online courses in higher education (Altın and Altın, 2021; Buckley et al. 2021; Esau et al., 2020). The IEM model allowed us to evaluate a flipped educational science course from a qualitative perspective. This aligns with the findings of Topper and Lancaster (2016), Gültekin-Demirci (2020), and Castro-Calvino et al. (2020). Parlett and Hamilton's IEM model has demonstrated its durability and is widely preferred by researchers both nationally (e.g., Özüdoğru and Adıgüzel, 2016) and internationally (Alderman, 2015; Bamkin et al., 2016). During the initial implementation of this flipped TESSM course, evaluating it from faculty perspectives and incorporating quantitative student success data would have been beneficial.

Using the Illuminative Evaluation Method, strengths and areas for improvement in the flipped TESSM course were identified. Key findings included: (1) high student

participation, with a strong ratio of student-to-instructor talk; (2) significant benefits from immediate instructor feedback; (3) positive perceptions of flipped learning, though students often reverted to direct instruction in micro-teaching; and (4) the method's effectiveness in evaluating a flipped course and highlighting unmet learning outcomes. Recommendations for improvement included: creating a table to map learning outcomes against activities to avoid omissions, diversifying assessments after pre-class videos, using open-ended questions or discussions to promote deeper understanding, training students in student-centered approaches for micro-teaching, and consolidating course resources into a single document. These suggestions aim to enhance future evaluations of flipped courses (see Table 5 for processes in Appendix B).

Limitations and Conclusion

This study proposed an innovative course evaluation model for flipped courses but has limitations. First, it was conducted in an educational sciences course, limiting generalizability to other courses. Future research could explore the applicability of the IEM in different fields, such as STEM disciplines (e.g., Physics), and with varied interview questions addressing technological challenges. Second, the study focused on the first iteration of the TESSM course. Replicating it in other semesters or with different student groups could reveal variations influenced by instructor and student biases or scheduling differences. Additionally, the structure of the study may have constrained the potential benefits of the evaluation model. Finally, while prioritizing descriptive and interpretive techniques over predictive ones, the study avoided in-depth instructor interviews due to time constraints, opting instead for transparent data analysis and actionable outcomes to support course improvement. These limitations suggest avenues for refining and expanding the use of IEM in future flipped course evaluations.

Future studies would benefit from using multiple data sources, such as think-aloud protocols with the instructor or pre-knowledge tests on course content with the students. Finally, the sample size in the present study was not sufficiently large, so caution should be exercised when generalizing the findings. Nevertheless, the current study adds to the literature in proposing a course evaluation model to explore the quality of a flipped course within a dynamic and interactive learning environment.

In conclusion, this study shifts the focus from the question of whether the flipped learning approach is effective to how to make it effective for more courses. The results demonstrate the importance of using an appropriate model to evaluate a course, particularly in the field of educational sciences. To effectively design a flipped course in any domain (i.e., Mathematics, Science, Education), instructors must consider the relationship between the identified aspects of the IEM and achievement (i.e., learning milieu), enact appropriate strategies to support students' learning (i.e., instructional systems), and ultimately guide them to succeed in a flipped classroom.

References

Abeysekera L and Dawson P (2015) Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research. *Higher Education Research and Development* 34: 1–14.

Abma TA and Stake RE (2001) Stake's responsive evaluation: core ideas and evolution. *New Directions for Evaluation* 92: 7–20.

Adnan M (2017) Perceptions of senior-year ELT students for flipped classroom: A materials development course. *Computer Assisted Language Learning* 30(3-4): 204–222.

Alaswad Z (2019) A case study of game-based learning in interior design studios. *Design and Technology Education: An International Journal* 24(3): 1–21.

Alderman L (2015) Illuminative evaluation applied to government policy in higher education. *Evaluation Journal of Australia* 15(1): 4–14.

Amstelveen R (2019) Flipping a college mathematics classroom: An action research project. *Education and Information Technologies* 24: 13371350.

Arbour G (2020) Frameworks for program evaluation: Considerations on research, practice, and institutions. *Evaluation* 26(4): 422–437.

Bamkin M, Maynard S and Goulding A (2016) Grounded theory and ethnography combined: A methodology to study children's interactions on children's mobile libraries. *Journal of Documentation* 72(2): 214–231.

Barillo M (1979) *Introduction to illuminative evaluation: Studies in higher education*. In: M. Parlett M and Dearden G (eds) California: Pacific Soundings Press.

Bergmann J and Sams A (2012) *Flip your classroom: Reach every student in every class every day*. ISTE: International Society for Technology in Education.

Birgili B, Göl S and Özcan M (2018) A Longitudinal Study on Evaluation of 'University within School': A Teacher Education Model. Paper presented at X. Uluslararası Eğitim Araştırmaları Kongresi [X. International Educational Research Congress], April, 27-30, Nevşehir Hacı Bektaş Veli Üniversitesi, Nevşehir, Türkiye, 2018.

Birgili B, Kızıltepe Z and Seggie FN (2016) Teaching method preferences of teachers: The cooperative teaching method. *World Studies in Education* 17(2): 37–52. https://www.ingentaconnect.com/contentone/jnp/wse/2016/00000017/00000002/art00004.

Birgili B, Seggie FN and Oğuz E (2021) The trends and outcomes of flipped learning research between 2012 and 2018: A descriptive content analysis. *Journal of Computers in Education* 8(3): 365–294. https://doi.org/10.1007/s40692-021-00183-y

Bond M (2020) Facilitating student engagement through the flipped learning approach in K-12: A systematic review. *Computers & Education* 151: 1–36.

Cameron BT (2014) Using responsive evaluation in strategic management. *Strategic Leadership Review* 4(2): 426.

Capar G and Tarim K (2015) Efficacy of the cooperative learning method on mathematics achievement and attitude: A meta-analysis research. *Educational Sciences: Theory & Practice* 15(2): 553–559.

Caruso G (2019) Facing EL teachers' burnout through motivation. *Journal of Pedagogical Research* 3(1): 1–14.

Castro-Calviño L, Rodríguez-Medina J, Gómez-Carrasco, CJ and López-Facal R (2020) Patrimonializarte: A heritage education program based on new technologies and local heritage. *Education Sciences* 10(7): 176.

CELT (2021). *Center for Research and Best Practices in Learning and Teaching*. https://www.mef.edu.tr/en/center-research-and-best-practices-learning-and-te#gsc.tab=0

Chivatá YP and Oviedo RC (2018) EFL students' perceptions of activeness during the implementation of flipped learning approach at a Colombian university. *GIST – Education and Learning Research Journal* 17: 81–105.

Cheng L, Ritzhaupt AD and Antonenko P (2018) Effects of the flipped classroom instructional strategy on students' learning outcomes: A meta-analysis. *Educational Technology Research and Development* 67(4): 793–824. https://doi.org/10.1007/s11423-018-9633-7

Coombe CM, Schulz AJ, Brakefield-Caldwell W, Gray C, Guzman JR, Kieffer EC, Lewis T, Reyes AG, Rowe Z, and Israel, BA (2019) Applying experiential action learning pedagogy to an intensive course to enhance capacity to conduct community-based participatory research. *Pedagogy in Health Promotion* 6(3): 168–182.

Çalışkan I (2014) Identifying the needs of pre-service classroom teachers about science teaching methodology courses in terms of Parlett's Illuminative Program Evaluation Model. *International Journal of Education in Mathematics, Science and Technology* 2(2): 138–148.

Çam-Aktaş B (2018) Induction to teaching program in Turkey: Attainments of novice teachers. *European Journal of Education Studies* 4(8).

Darwin S (2016) The emergence of contesting motives for student feedback-based evaluation in Australian higher education. *Higher Education Research & Development* 35(3): 419–432.

Darwin S (2017) What contemporary work are student ratings actually doing in higher education? *Studies in Educational Evaluation* 54: 13–21.

Dearden G and Laurillard D (1977) Illuminative evaluation in action: An illustration of the concept of progressive focusing. *Research Intelligence* 3(2): 3–7.

Donaldson SI (2017) Empowerment evaluation: An approach that has literally altered the landscape of evaluation. *Evaluation and Program Planning* 63: 136–137.

Dusenbury MJ and Olson MR (2019) The impact of flipped learning on student academic performance and perceptions. *Collegiate Aviation Review International* 37(1): 19–44.

Esau N, English R and Shung-King M (2020) An assessment of a "Training-of-trainers programme for clinic committees" in a South African district: A qualitative exploratory study. *Research Square*.

Fetterman DM (1993) *Speaking the language of power: Communication, collaboration, and advocacy (Translating ethnography into action)*. London, England: Falmer Press.

Fetterman DM (1994) Empowerment evaluation. *Evaluation Practice* 15(1): 1–15.

Fetterman D (2001) Empowerment evaluation and self-determination: A practical approach toward program improvement and capacity building. In: Schneiderman N, Speers, MA, Silva, JM, Tomes, H and Gentry JH (eds) *Integrating Behavioral and Social Sciences with Public Health*. Massachusetts: American Psychological Association, pp.321–350.

Fetterman DM (1995) Empowerment evaluation: A form of self-evaluation. In: *Annual Meeting of the American Educational Research Association*, SanFrancisco, CA, 18-22 April, 1995.

Fetterman D (2019) Empowerment evaluation: A stakeholder involvement approach. *Health Promotion Journal of Australia: Official Journal of Australian Association of Health Promotion Professionals* 30(2): 137–142.

Fitzpatrick JL, Sanders, JR, and Worthen, BR (2010) *Program evaluation: Alternative Approaches and Practical Guidelines* (4th ed) London: Pearson Press.

Flipped Learning Academy (2018) Higher Education Flipped Learning Conference. http://www.flippedlearningacademy.org

Flipped Learning Review 3.0 Magazine [FLRM] (nd) Available online at http://flr.flglobal.org, accessed April 25 2018.

Foldnes, N (2016) The flipped classroom and cooperative learning: Evidence from a randomised experiment. *Active Learning in Higher Education,* 17(1): 39–49.

Fraenkel, JR, Wallen, NE, and Hyun, HH (2015) *How to design and evaluate research in education*. New York, NY: McGraw Hill Press.

Gay LR, Mills, GE, and Airasian, PW (2011) *Educational research competencies for analysis and applications* (10th ed) Pearson Press.

Gredler, ME (1996). *Program Evaluation*. Merrill Press.

Gruba P, Cardenas-Claros MS, Suvorov R, and Rick K (2016) *Blended Language Program Evaluation*. London, UK: Palgrave Macmillan Press.

Guba EE and Lincoln YS (1989) *The fourth generation evaluation*. Newbury Park, CA: Sage Press.

Guo Z, Zhao Y and He Z (2019) Course reform of general chemistry based on evaluation of curriculum achievement under engineering education accreditation. In: 9th International Conference on Social Science and Education Research (SSER 2019), 25-27 October, 2019, UK.

Gültekin M and Demirci C (2020) Evaluation of the English language preparatory school curriculum in the lights of illuminative evaluation model. *European Journal of English Language Teaching* 5(3): 103–131.

Hanson R (2019) The impact of two-tier instruments on undergraduate chemistry teacher trainees: An illuminative assessment. *International Journal for Infonomics* 12(4): 1920–1928.

Holland J and Campbell J (editors) (2005) *Methods in development research: combining qualitative and quantitative approaches*. West Yorkshire, UK: ITDG Press.

Huebner AJ and Betts SC (1999) Examining fourth generation evaluation: Application to positive youth development. *Evaluation* 5(3): 340–358.

Hwang GJ, Chen, MRA, Sung HY and Lin MH (2018) Effects of integrating a concept mapping-based summarization strategy into flipped learning on students' reading performances and perceptions in Chinese courses. *British Journal of Educational Technology*. https://doi.org/10.1111/bjet.12708

Jang HY and Kim HJ (2020) A meta-analysis of the cognitive, affective, and interpersonal outcomes of flipped classrooms in higher education. *Education Sciences* 10(4): 115. https://doi.org/10.3390/educsci10040115

Jin G, Cai S and Cheng M (2023) Exploring the effectiveness of flipped classroom on STEM student achievement: A meta-analysis. *Technology Knowledge and Learning*. https://shura.shu.ac.uk/32583/

Karadağ E and Yücel C (2020) Devlet üniversiteleri ve fakülteleri sıralaması [DÜS] 2020 [Public universities and faculties rankings (DÜS) 2020]. University Research Laboratory Press. doi: 10.13140/RG.2.2.33183.61605

Klintberg I (1976) A responsive evaluation of two programs in medical education. *Studies in Educational Evaluation* 2(1): 23–30.

Krueger RA and Casey MA (2014) *Focus groups: A practical guide for applied research* (5th ed), Thousand Oaks, California: Sage Publications, Inc.

Kushner S (1996) The limits of constructivism in evaluation. *Evaluation* 2(2): 189–200.

Låg T and Sæle RG (2019) Does the flipped classroom improve student learning and satisfaction? A systematic review and meta-analysis. *AERA Open* 5(3): 2332858419870489.

Lai CL and Hwang GJ (2016) A self-regulated flipped classroom approach to improving students' learning performance in a mathematics course. *Computers & Education* 100: 126–140.

Lam J (2015) *The student experience of a blended learning accounting course: A case study in Hong Kong*. PhD Thesis, University of Nottingham, UK.

Lang FK, Randles CA and Jeffery KA (2020) Developing and evaluating a graduate student teaching assistant training course in the chemistry department of a large American university. *Journal of Chemical Education* 97(6): 1515–1529.

Larusdottir M, Roto V, Stage J, Lucero, A and Šmorgun, I (2019) Balance talking and doing! Using google design sprint to enhance an intensive ucd course. In *Human-Computer Interaction – INTERACT 2019,* pp.95–113. Springer International Publishing.

Laughlin R and Broadbent J (1996) Redesigning fourth generation evaluation: An evaluation model for the public-sector reforms in the UK? *Evaluation* 2(4): 431–451.

Laughlin R and Broadbent J (1996) Redesigning fourth generation evaluation: An evaluation model for the public-sector reforms in the UK? *Evaluation* 2(4): 431–451.

Lay M and Papadopoulos I (2007) An exploration of fourth generation evaluation in practice. *Evaluation* 13(4): 495–504.

Lee HM (2007) An inquiry into co-teaching in classes and students' reaction with different teachers. *Fall 2007 Issues in EFL* 5(2): 78–91.

Lin CJ and Hwang GJ (2018a) A learning analytics approach to investigating factors affecting EFL students' oral performance in a flipped classroom. *Educational Technology & Society* 21(2): 205–219.

Lin HC and Hwang GJ (2018b) Research trends of flipped classroom studies for medical courses: a review of journal publications from 2008 to 2017 based on the technology-enhanced learning model. *Interactive Learning Environments*. doi: 10.1080/10494820.2018.1467462

Long T, Cummins J and Waugh M (2017) Use of the flipped classroom instructional model in higher education: Instructors' perspectives. *Journal of Computing in Higher Education* 29(2): 179–200.

Lopes AP and Soares F (2017) *What do students of a higher education institution think about flipped learning?* In: Proceedings of Edulearn17 Conference, 3-5th July, Barcelona, Spain.

Louhab FE, Bahnasse A, Bensalah F, Khiat A, Khiat Y and Talea M (2020) Novel approach for adaptive flipped classroom based on learning management system. *Education and Information Technologies* 25(2): 755–773.

Luo Er C (2015) NTU to spend S$75 million to implement flipped classroom model. *Channel NewsAsia*. https://www.channelnewsasia.com/news/singapore/ntu-to-spend-s-75-million-to-implement-flipped-classroom-model-8247600

Madaus G and Stufflebeam D (2000) Program evaluation: A historical overview. In: Stufflebeam DL, Madaus CF and Kellaghan T (eds) *Evaluation Models*, pp.3–18. Dordrecht, Kluwer Academic Press.

Massey C (2017) A case study of curriculum innovation for global capacities: One response to the call of the twenty-first century. In: S. Choo *et al*. (eds), *educating for the 21st Century*. Springer Press.

Miles MB and Huberman AM (1994) *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks, USA: Sage Publications, Inc.

Nanyang Technological University (2018) Learning design and development. http://www.ntu.edu.sg/cits/lsa/LDD/Pages/OnlineCourseDesignDevelopment.aspx

Nevo D (1983) The conceptualization of educational evaluation: An analytical review of the literature. *Review of Educational Research* 53(1): 117–128.

OECD (2023). PISA 2022 Results. Retrieved from: https://www.oecd.org/en/publications/pisa-2022-results-volume-i-and-ii-country-notes_ed6fbcc5-en/turkiye_d67e6c05-en.html

Oliver E (2019) The triangle of effective education implemented for Theology. *HTS Theologies Studies/Theological Studies* 75(1): 1–8.

Orhan A (2019) The effect of flipped learning on students' academic achievement: A meta-analysis study. *Çukurova University Faculty of Education Journal* 48(1): 368–396.

Özüdoğru F and Adıgüzel OC (2016) The analysis of the views of English teachers about 2nd grade English language teaching curriculum. *E-international Journal of Educational Research* 7(2) 16–35.

Özüdoğru F (2017) The teaching of listening and speaking skills within the context of primary school second grade English language teaching curriculum. Mehmet Akif Ersoy University *Journal of Faculty of Education* 42: 189–210.

Pardo A and Mirriahi N (2017) Design, deployment and evaluation of a flipped learning first-year engineering course. In: Reidsema C, Kavanagh L, Hadgraft R and Smith N (eds), *Flipping the Classroom: Practice and Practices in Higher Education,* pp.177-191. Singapore: Springer Press.

Parlett RP and Dearden G (1977) *Introduction to Illuminative Evaluation: Studies in Higher Education*. California: Pacific Soundings Press.

Parlett M and Hamilton D (1972) *Evaluation as illumination: A new approach to study of innovatory programs.* Centre for Research in the Educational Sciences, University of Edinburgh.

Parlett M and Hamilton D (1976) Evaluation as illumination. In: Tawney D (eds), *Curriculum Evaluation Today*. London, UK: Macmillan Press.

Patton MQ (1980) *Qualitative Evaluation Models*. London: Sage Press.

Patton MQ (2002) *Qualitative Research and Evaluation Methods* (3rd ed) London: Sage Press.

Patton MQ (2018). Evaluation science. *American Journal of Evaluation* 39(2): 183–200.

Paolucci-Whitcomb P, Bright WE II, Carlson RV and Meyers HW (1987) Interactive evaluation: Processes for improving special education leadership training. *Remedial and Special Education* 8(3): 52–61.

Praslova L (2010) Adaptation of Kirkpatrick's four level model of training criteria to assessment of learning outcomes and program evaluation in Higher Education. *Educational Assessment, Evaluation and Accountability* 22: 215–225. https://doi.org/10.1007/s11092-010-9098-7

Rakel R (1976) A summary: responsive evaluation and family practice. *Studies in Educational Evaluation* 2(1): 35–36.

Ranellucci J, Robinson KA, Rosenberg JM, Lee Y, Roseth CJ and Linnenbrink-Garcia L (2021) Comparing the roles and correlates of emotions in class and during online video lectures in a flipped anatomy classroom. *Contemporary Educational Psychology* 65:101966.

Schnoes CJ, Murphy-Berman V and Chambers JM (2000) Empowerment evaluation applied: Experiences, analysis, and recommendations from a case study. *American Journal of Evaluation* 21(1): 53–64.

Smith C and Becker S (2021) Using communities of practice to facilitate technology integration among k-12 educators: A qualitative meta-synthesis. *Journal of Technology and Teacher Education* 29(4): 559–583.

Smith J and Osborn M (2003) Interpretive phenomenological analysis. In: Smith, JA (ed), *Qualitative Psychology: A Practical Guide to Research Methods* 51–80. London: Sage Press.

Sorcinelli G, Parsons M and Halpern E (1984) Naturalistic responsive evaluation: A new methodology for evaluating health and safety in education. *Lifelong Learning,* 8(1): 4–6.

Spanja S (2019) Evaluation as a pedagogical phenomenon. *Školski vjesnik,* 68(1): 279–297.

Spiegel AN, Bruning RH and Giddings L (1999) Using responsive evaluation to evaluate a professional conference. *The American Journal of Evaluation* 20(1): 57–67.

Stake RE (nd) Program evaluation, particularly responsive evaluation. *Evaluation in Education and Human Services* 343–362.

Stake RE (1967) Toward technology for the evaluation of educational programs. In: Tyler, RW, Gagne RM and Scriven M (eds), *Perspectives of Curriculum Evaluation*, pp.1-12. Chicago, USA: Rand McNally Press.

Stake RE (1974) Program evaluation, particularly responsive evaluation. In: Dockrell WB and Hamilton D (eds) *Rethinking Educational Research*. London, UK: Hodder and Stoughton Press.

Stake RE (1975) To evaluate an arts program. In: Stake RE (ed.), *Evaluating the Arts in Education: A Responsive Approach*, pp.13-31. Columbu, OH: Merrill Press.

Stake RE (1977) The countenance of educational evaluation. In: Bellack AA and Kliebard HM (eds) *Curriculum and Evaluation*, pp.372-390. Berkeley, CA: McCutchan Press.

Stake RE, Migotsky C, Davis R, Cisneros EJ, Depaul G, Dunbar C and et al (1997) The evolving synthesis of program value. *Evaluation Practice* 18(2): 89–103.

Stake R (2003) Responsive evaluation. In: Kellaghan T and Stufflebeam DL (eds) *International Handbook of Educational Evaluation*. Kluwer International Handbooks of Education, 9. Dordrecht: Springer Press.

Statistical Package for the Social Sciences Inc (2012). IBM statistics 21. SPSS Inc Press.

Stufflebeam DL, Madaus GF and Kellaghan T (2002) *Evaluation Models*. Dordrecht: Kluwer Academic Publishers.

Stöhr C, Demazière, C and Adawi T (2020) The polarizing effect of the online flipped classroom. *Computers & Education 147*.

Şahin M and Fell Kurban C (2016) *The Flipped Approach to Higher Education: Designing Universities For Today's Knowledge Economies And Societies*. Emerald Press.

Şahin M and Fell Kurban C (2024) *The Impact of ChatGPT on Higher Education: Exploring the AI Revolution*. Emerald Press.

Şahin Ş and Kılıç A (2018) School self-evaluation model suggestion. *International Journal of Instruction,* 11(3): 193–206.

The Flipped Learning Global Initiative (2025) Flipped learning definition. https://www.flglobal.org/international_definition/

Tesch R (1990) *Qualitative Research: Analysis Types and Software Tools*. New York: Falmer Press.

Thanabalan TV, Siraj S and Alias N (2015) Evaluation of a digital story pedagogical module for the indigenous learners using the stake countenance model. *Procedia - Social and Behavioral Sciences,* 176: 907–914.

Topper A and Lancaster S (2016). Online graduate educational technology program: An illuminative evaluation. *Studies in Educational Evaluation,* 51(1): 108–115.

van der Mars H (1989) Observer reliability: Issues and procedures. In: Darst PW, Zakrajsek DB and Mancini VH (eds) *Analyzing Physical Education and Sport Instruction* (2nd ed) Human Kinetics 53-80.

Ying Y and Russman MA (2018) Evaluation of curriculum impact to students' internship: A case study in Chinese department of Bina Nusantara University, Indonesia. In: ICDEL '18: *Proceedings of the 2018 International Conference on Distance Education and Learning* May, 2018, 84-87. https://doi.org/10.1145/3231848.3231872

Yoon S, Park MY and McMillan M (2017) An illuminative evaluation: Student experience of flipped learning using online contents. *Journal of Problem-Based Learning,* 4(1): 47–54.

Yücel-Toy B and Ok A (2012) The qualitative inquiry in the evaluation of a pedagogical course from the prospective teachers' points of view. *The Qualitative Report*, 17(1): 143–174.

Zawacki-Richter O, Kerres M, Bedenlier S, Bond M and Buntins K (eds) (2020) *Systematic Reviews in Educational Research*. Springer Fachmedien Wiesbaden Press.

Zohrabi M (2012) Preliminary aspects of language course evaluation. *The Journal of Pan-Pasific Association of Applied Linguistics,* 16(1): 123–144.

Zou D, Xie H, Wang, FL and Kwan R (2020) Flipped learning with Wikipedia in higher education. *Studies in Higher Education*, 1–20.

Appendix A

Focus Group Interview Questions

1. In which types of courses do you think flipped learning can be effective? Why?
2. Could you tell us about the Turkish Education System and School Management course content?

• What do you think about the effectiveness of flipped learning for this course?

3. What were the tools and materials used in the Turkish Education System and School Management course, which was taught according to the flipped learning approach?

• For what purpose were these tools used in the course?

• Have any needs required?

4. Could you describe the learning environment of the Turkish Education System and School Management course?
5. What did you pay attention to while preparing for the Turkish Education System and School Management course, which is taught in line with the flipped learning approach?
6. Do you think the Turkish Education System and School Management course was taught in accordance with the flipped learning? Please state your opinion with positive or negative aspects.

• What would you say about whether the course content and the teaching method followed meet your expectations before the course?

7. How did you use flipped learning while preparing your math lectures for this lesson?

• What did you experience? Give an example.

• What do you think about the relationship between the subject/course content you explained during group presentations and the Turkish Education System and School Management course?

8. Do you think flipped learning is a useful approach to achieve the learning outcomes of the Turkish Education System and School Management course?

• What are your experiences?

9. If you evaluate flipped learning in terms of the Turkish Education System and School Management course, what are the advantages and disadvantages?

• What problems did you have?

10. What are your suggestions for the development of the Turkish Education System and School Management course according to the flipped approach?

• What could be the suggestions in terms of content?

• What are your suggestions in terms of teaching method

Appendix B

Table 5.

Course Evaluation Model Processes

Data to be collected	Why?	By Whom?	Procedure	How data will be analyzed	What does this inform?
Classroom Observations	●To gather data on non-verbal behaviors. ●To analyze what is happening regarding ongoing behaviors as they occur and to make appropriate notes about salient features of the phenomena observed.	A colleague or *Center for Research and Best Practices in Learning and Teaching* (CELT) member as participant observer	●Gain permission from students to observe classes. ●Observe classes (before, during, and after) and take notes of salient features. ●Video the same classes.	●Break the video down into 30-second segments. ●Interpret each segment according to the categories in the video analysis framework (See Table 2).	●FGI questions ●Triangulation with other data
Focus Group Interviews (FGIs)	●Reveal how and why students hold certain beliefs about the program of interest. ●Gather data from a variety of points of view. ●Gather in-depth, considered responses with every interviewee contributing towards the discussion. ●Understand the group's view on the quality of the course. ●Trends and patterns in perceptions and experiences from the FGIs will be carefully and systematically analyzed so that how students perceive the quality of the course in terms of teaching method can be explored.	A colleague or CELT member	●Gain permission from students to participate in focus groups and for the interviews to be recorded. ●Write open-ended questions based on what was illuminated in the classroom observations and document analysis. ●Check the quality of questions with a third party. ●Adjust questions based on the third-party feedback. ●In the focus group, use guiding questions to encourage contributions from every interviewee.	●Transcribe the FGIs. ●Break the transcription down into utterances. ●Send the transcription to the participants to member check for accuracy. ●Anonymize students using a code. ●Give a number for each utterance. ●Read the transcripts several times to reflect thoughts and interpretations of the phenomena. ●Perform qualitative data analysis using thematic analysis. ●Transform notes into emergent themes by making associations between actual participant statements and the researchers' interpretations.	●Document Analysis ●Triangulation with other data

				• Group units of information with similar meanings into more comprehensive themes, to assist in organizing and interpreting the unstructured data. • Read each participant's views and interpret as positive, neutral, or negative and add a symbol added to the transcript (+, *, -). • If a participant provides a counter argument to any other peers, give a symbol. (See Table 4 for details)	
Document Analysis	• Documents can provide us with a condensed picture of data from several textual resources, which can then be examined and interpreted in order to elicit meaning.	A colleague or CELT member	• Conduct document analysis to the syllabus (including course description, aims, design, planned learning and teaching methods, learning outcomes and assessment criteria, as well as recommended readings and course policies).	• Map documents in a chart against each outcome so that missing elements can be illuminated (see Table 6 for details).	• Focus Group Interview questions • Triangulation with other data

Now, triangulate the data from the class observations, FGIs and document analysis and analyze and evaluate the results.

Share results with the teacher throughout the course to ensure transparency, ethics, and to allow changes to be made as data becomes available.

Genişletilmiş Türkçe Özet

Pandeminin 2020 yılındaki etkileri, çevrimiçi ders tasarımı için en iyi uygulamaların küresel çapta dikkat çekmesine yol açmıştır. Bu kapsamda, öğretmen ve öğrenci arasındaki ilişkileri güçlendirmek amacıyla yeni yöntemler benimsenmiştir (Smith ve Becker, 2021). Eğitim alanında ters yüz öğrenme yaklaşımı (flipped learning), çevrimiçi öğrenmeyle özellikle uyumlu bir model olarak öne çıkmıştır (Låg ve Sæle, 2019; Stöhr vd., 2020). Bu modelin temel amacı, ders içeriklerini ders dışında öğrencilere sunarak, ders içerisindeki zamanı etkin, pratik ve uygulamalı faaliyetlere ayırmaktır ("The Flipped Learning Global Initiative," t.y.). Ters yüz öğrenme, öğrencilerin çevrimiçi içeriklerle etkileşim kurmasını, öğrenci-öğrenci ve öğrenci-öğretmen işbirliğini geliştirmesini, ödevlerle aktif olarak meşgul olmasını, sorumluluk almasını ve öğrenme kaynaklarına (eğitmen videoları gibi) serbestçe erişebilmesini sağlar (Birgili vd., 2016).

Daha önceki çalışmalar, ters yüz öğrenmenin tüm eğitim seviyelerinde etkili bir pedagojik yaklaşım olarak küresel tanınırlığına odaklanırken (Bond, 2020; Lopes ve Soares, 2017; Zou vd., 2020), son araştırmalar, bu yöntemin öğrencilerin başarısı üzerindeki etkisini incelemeye yönelmiştir (bir meta-analiz için bkz. Orhan, 2019). Ters yüz öğrenme uygulamalarının, öğrenci performansını önemli ölçüde iyileştirdiği ve bilişsel, duyuşsal ve sosyal beceriler üzerinde olumlu etkiler yarattığı belirtilmiştir (Birgili vd., 2021).

Bu çalışmanın amacı, Parlett ve Hamilton (1972) tarafından geliştirilen Aydınlatıcı Değerlendirme Modeli'nin (Illuminative Evaluation Model) eğitim bilimleri alanındaki uygunluğunu incelemektir. Bu model, Bergmann ve Sams (2012) tarafından tanımlanan ters yüz öğrenme yöntemi kullanılarak tasarlanan bir dersin değerlendirilmesi için kullanılmıştır. Çalışma, iki temel araştırma sorusuna odaklanmıştır:

1. Aydınlatıcı Değerlendirme Modeli, ters yüz eğitim bilimleri dersinin değerlendirilmesinde hangi yollarla ve ne ölçüde kullanılmaktadır?
2. Öğrenciler, ters yüz eğitim bilimleri dersindeki deneyimlerini aydınlatıcı bir değerlendirme yoluyla nasıl açıklamaktadır?

Yöntem

Araştırmaya, ilkokul matematik eğitimi alanında öğrenim gören 17 birinci sınıf öğrencisi (16 kız ve 1 erkek) katılmıştır. Ters yüz öğrenme yöntemi, üniversitenin eğitim modeli olarak kullanıldığı için tüm katılımcılar bu yöntemi farklı derslerde (analiz, matematik öğretimine giriş gibi bölüm dersleri ve üniversite hayatına giriş gibi seçmeli dersler) deneyimlemiştir. Katılımcılar dört hafta süreyle bu çalışmaya dahil olma konusunda gönüllülük esasıyla izin vermiştir. Toplamda sekiz ders kaydedilmiş ve her biri 90 dakika sürmüştür. Derslerde öğretmenin ve öğrencilerin etkileşimi kaydedilmiştir. Kayıtlar, öğretim uygulamalarını ve öğrenci etkileşimlerini analiz etmek için yazılı metne dönüştürülmüştür. Bu gözlemler, ters yüz öğrenme ortamını daha yakından anlamak için Parlett ve Hamilton'ın öne çıkardığı "öğrenim ortamı" kavramını temel almaktadır.

Birinci yazar tarafından yazılan saha notları, sınıfta gözlemlenen deneyimlere eleştirel bir bakış getirmeyi ve daha derin analiz seviyelerine ulaşmayı amaçlamıştır (Miles ve Huberman, 1994). Bu notlar, özellikle öğrenci-öğretmen ve öğrenci-öğrenci etkileşimlerini anlamak için detaylı bilgiler sağlamıştır. Araştırmaya katılan öğrencilerle, iki odak grup halinde toplam 40 dakikalık mülakatlar yapılmıştır. Bu mülakatlarda öğrenciler, ters yüz öğrenme sürecindeki deneyimlerini, karşılaştıkları zorlukları ve dersin genel etkisini tartışmıştır. Mülakatlardan elde edilen bulgular, ters yüz öğrenme sürecinin farklı öğrenci grupları üzerindeki etkilerini anlamada benzersiz bir bakış sunmuştur. Ders programı, el kitapları, etkinlik formları ve değerlendirme materyalleri incelenmiştir. Bu materyaller, ters yüz öğrenme ortamının öğretim sistemlerine nasıl entegre edildiğini ve bu sistemin nasıl işlediğini anlamak için kullanılmıştır. Özellikle, öğrencilerin ders öncesinde izlediği çevrimiçi videolar da bu incelemenin bir parçasını oluşturmuştur.

Araştırma ekibi, ters yüz öğrenme yöntemini benimsemiş üç akademisyenden oluşmaktadır. Birinci yazar, eğitim bilimleri alanında doktora öğrencisi olarak ders gözlemleri, saha notları ve odak grup mülakatlarını kaydetmiştir. İkinci yazar, 19 yıllık araştırma deneyimi, üç yıllık ters yüz sınıf öğretimi deneyimi ve istatistiksel veri analizi uzmanlığıyla katkı sağlamıştır. Üçüncü yazar ise eğitim ve okul sistemi dersi eğitmeni olarak profesyonel gelişim programları sunmuş ve ters yüz öğrenme tasarımlarının kalitesini sağlamıştır. Veri toplama süreci boyunca, birinci yazar değerlendirici (gözlemci-araştırmacı) rolü üstlenirken, üçüncü yazar eğitmen (eğitmen-araştırmacı) rolünde bulunmuştur. Veriler, Aydınlatıcı Değerlendirme Modeli'nin öğrenim ortamı (1. ve 2. aşamalar) ve öğretim sistemleri (3. aşama) olmak üzere iki boyutuna göre analiz edilmiştir.

Sonuç

Ters yüz öğrenme sürecindeki etkinlikler arasında; ders anlatımı (%23,68), öğrenci cevapları (%18,42), öğrenci fikirlerinin kullanılması (%15,79), öğrenci tarafından başlatılan konuşmalar (%10,53) yer almıştır. Öğretmenin iletişiminin öğrencilerle etkili olduğu görülmüş ve sınıf içi etkinliklere katılımın artmasını sağlamıştır.

Mülakat verileri, ters yüz öğrenmenin grup çalışması ve aktif katılımı vurguladığını ortaya koymuştur. Katılımcılar, eğitim sistemlerine ilişkin farklı bakış açıları kazandıklarını belirtmiştir. Ancak, matematik dersi için daha fazla materyal desteği gerektiğini vurgulamıştırlar. Bir öğrenci, grup çalışmalarına ön yargısını aştığını ve başkalarının fikirlerinden fayda sağladığını belirtmiştir.

Dersin sonunda öğrenciler, eğitim sistemine dair SWOT analizi yaparak kendi reform planlarını geliştirmiş ve konuya dair bilgi birikimini derinleştirmiştir. Eğitmen rehberliğinde kendi matematik ünitelerini ters yüz öğrenme yöntemiyle tasarlama konusunda bilgi sahibi olmuşlardır.

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