

NATIONAL REPORTS - TURKEY

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INTRODUCTION

CODING4GIRLS addresses the gap between male and female participation in computer science education and careers by introducing early methodological learning interventions that make computer science attractive to all. It introduces interventions that target the factors that lead girls to not choose computer science, namely a) misperception of the roles and professional careers; and b) wrong assumption of insufficient skills. The main goal is to attract girls by raising their awareness on the rich possibilities for professional and personal growth that computer science offers and by preparing them for future engagement in computer science careers.

CODING4GIRLS introduces a design thinking pedagogical approach that is heavily linked to human-centred solutions. This approach challenges the learners to see the big picture before designing a detailed solution, encourages them to consider wider community interests, and challenges them to think entrepreneurially on how digital technologies can be used to address real-world problems.

In this publication, the results of the validation test in Turkey presented. Governorship of Istanbul has implemented the validation test for the proposed learning framework through the design and development of awareness raising serious games in Turkey with the participation of students and teachers.

TURKEY

EXECUTIVE SUMMARY

The validation procedures of the Coding4Girls approach were implemented in Turkey between June and November 2020. Since the schools were closed due to the pandemic, the implementation of the testing was done online for both students and teachers.

The teachers from 14 schools (Primary, secondary and vocational) were invited to the testing activity and 72 girls from the 9th grade (aged 13-15) of Hasbahçe Religious High School had participated to the online testing activities in Turkey. All implementation activities were based on the selected C4G learning scenarios and instructions for students and assumed independent work of students under the guidance of their teachers in virtual classrooms.

Using developed data collection tools annexed in this publication, teachers' and students' attitudes, observations and comments regarding the game-based C4G methodology for building programming skills were collected.

Results showed that students liked the game-based C4G methodology. Conducted activities enabled them to develop their programming skills in a fun and creative way. Although the participating students did not possess the skills related to coding and programming, their motivation towards coding skills are enhanced after the activity. Teachers who participated to the validation activities consider the C4G approach as suitable and efficient way of acquiring programming skills that is applicable and appropriate for the students.

IMPLEMENTATION

Data collection tools

During the validation of Coding4Girls (C4G) approach, all the data collection tools provided in the C4G validation strategy were used:

- S1 – Preliminary questionnaire (for students)
- S2 – Follow-up questionnaire (for students)
- S3 – Student’s comments
- T1 – Teacher’s observations
- T2 – Teacher’s comments

The data collection tools were before validation activities translated into the Turkish language.

Questionnaires S1 and S2 were created using Google Forms while data collection tools S3, T1 and T2 for teachers were prepared as Google Forms in which they could write observations and comments.

Materials

The experts from the Governorship of Istanbul used the 3D game environment developed within the framework of the C4G project and the learning scenarios for students. For the validation event with teachers, the experts used the learning scenarios with instructions. Since the event was done in online environment, the participants were informed to install the 3D game before the event.

The second learning activity which is “Discover Snap! Move a sprite -Time to bring your sprite to life” was chosen for the teachers. The activity contains basic programming concepts that are in the focus of the C4G approach such as dialogs and movement. These learning scenarios enable users to learn one or multiple programming concepts by creating a game that addresses real-world problem. To further motivate girls to learn programming, the topics of real-world problems are chosen to be attractive to girls. All resourced were translated into the Turkish language prior to implementation.

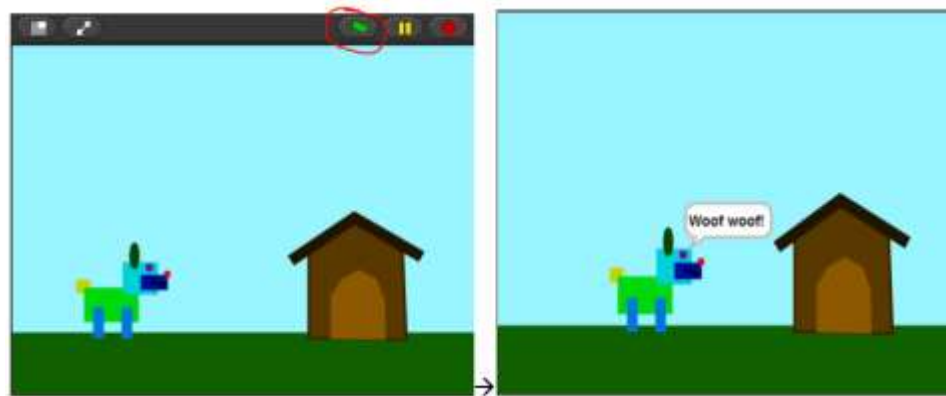


Figure 1 – “Discover Snap!: Moving a Sprite” learning activity.”

As for the activity with the students, the following two games were introduced to the students;

1. Game

Mini Game Category

-Looks

Mini Game

-Snake Game

2. Game

Mini Game Category

-Trigonometry

Mini Game

-Pattern Matching Game

Operation family

-Basic Operations



Figure 2 – “Basic Calculation in Trigonometry” activity.

Setup model and procedure

The validation events were implemented under the shadow of COVID-19 pandemic. Therefore, all activities were online. The first step for the event with teacher was to inform them about the project and its results. The participants were provided with the 3D games and learning scenarios before the actual event starts. In total, 14 IT and Computer teachers from secondary and high school levels were invited. The experts from Governorship of Istanbul presented the project, learning scenarios and the 3D games briefly to the participants and the second learning scenario was implemented online with the teachers. After the activity, the formal feedbacks from the teachers were gathered online.

Sessions for building programming skills using the C4G approach were organized online with the participation of 72 high school students from the 9th grade (aged between 13-15) due to COVID-19 pandemic. Although the subject is compulsory at the high schools, it is not thought during the online education. The students were provided with the link of the 3D games and the S1 test before the event. They were divide into 3 classes and the activity took 2 hours on Zoom. The experts form GOI first organized sessions in order to introduce coding concepts. Students could practice those concepts using exercises and then they were expected to create a serious game using the learnt coding concepts. During the sessions, experts provided guidance and help to the students with the given tasks. After the

implementation, in the last session, students answered the follow-up questionnaire (S2) about their perception and views on the C4G learning approach. They were required to write the anonymised code received from the teacher to ensure comparison of results regarding the self-assessment of their programming skill. The experts and teachers from the school collected students' qualitative opinions and comments through a group discussion in virtual classrooms (S3).

Participants

The validation event for students took place online with the female students from Hasbahçe Religious School. All 72 students were from the 9th grade whose ages varies between 13 and 15. Their previous experiences with coding and programming is very low however they have the basic skills on the use of computer and basic software such as Ms Windows and Office. The 14 teachers selected for the validation are Computer teachers with at least 10 years of experience in teaching informatics. Although they have all necessary skills in teaching coding and programming, they do not teach coding at the schools since it is not in their curriculum at schools.

Years of age	Grade	Number of students
13	9	10
14	9	55
15	9	7
Total		72

Table 1 - Number of students by age/grade

RESULTS

Results of questionnaires for students

Two questionnaires for students were used: preliminary questionnaire about the use of digital devices and perceived level of programming and the follow-up questionnaire about satisfaction with programming and coding activities, satisfaction with the organization of the implementation, and perception on the acquired coding skills.

In both questionnaires students were asked to self-assess their current level of programming skills. Based on this question, the difference between students' self-assessed

initial and final level of programming skill was calculated (the answers from the questionnaires were paired based on the code that students have entered).

All students who participated in C4G activities solved preliminary questionnaire and the follow-up questionnaire.

S1 - Preliminary questionnaire

A total of 72 students solved the preliminary questionnaire about the use of digital devices and perceived level of programming. The mean age of students was 13.94 years. Table 3 shows descriptive statistical analysis of participants' responses to the questions related to the use of digital devices, the internet and video-games. Since the formal face-to-face education is transformed to online education due to Covid-19 pandemic, the use of computer, tablet and other digital devices is probably higher than its value before the pandemic. The use of internet is more than 4 hours among the participants. This can also be based to the online education. The results also show that the average age for girls to start using digital devices is 9 and their average playtime with digital games is around an hour per day.

Question	Averages
1. For how long have you been using computers, tablets or other digital devices (in years)?	4,89 years
2. How many hours per week do you use a computer, tablet or other digital device?	30,13 hours
3. How many hours per week do you use the Internet?	29,73 hours
4. How many hours per week do you play video games?	6,47 hours

Table 2 - The use of digital devices, the internet and video-games by gender

The participants self-assessed the level of their programming skills on the scale from 0 - I have never coded or programmed before to 4 - I can design a solution of a problem in the form of a program. Results are shown in the Table 3. Most of the students stated for themselves that they are at level 0 - *Never coded or programmed before* (76.39%) or on level 1 – *Novice Programmer* (9.72%). The percentage of 3- Simple Programmer is 13,89%.

Level of programming skills	Frequency	Percentage
0 - I have never coded or programmed before	55	76.39%
1 - I am a novice programmer (just have basic ideas)	7	9.72%
2 - I can code simple programs	10	13.89%
3 - I am fluent in programming (can create a full program)	0	0%
4 - I can design a solution of a problem in the form of a program	0	0%

Table 3 - Self-assessment of programming skills

In the preliminary questionnaire the participants also stated which programming concepts are they familiar with. The results (Table 4) show that students are not familiar with the concept related to programming which makes the findings in the previous section consistent. The students with the knowledge on programing are mostly familiar with the *statements* (13 students) and *operators* (12 students) while only 11% of them are familiar with conditionals and variables.

Concept	Frequency
Loops	6
Conditionals	8
Variables	8
Statements (sounds, movement, looks, drawing)	13
Operators	12
Events	7
Parallelism	5

Table 4 - Familiarity with the programming concepts

Table - 5 shows students' responses about what motivates them to learn to program (students could choose one or more responses). The most of the students are motivated by the joy they have during solving problems (23,61%). The second highest option is the success in the programming class (22.22%). On the other hand, 23.61 % of the students do not feel themselves motivated for learning coding or programming.

Response	Frequency	Percentage
I'm not motivated	17	23.61%
I want to succeed in the programming class	16	22.22%
I want to show other students I can program	0	0%
I want to follow a career in programming	9	12.50%
I enjoy solving logic problems and puzzles	18	25.00%
Other	11	15.27%

Table 5 - Motivation for learning programming

S2 – Follow-up questionnaire

A total of 72 students answered the follow-up questionnaire about satisfaction with programming and coding activities, satisfaction with the organization of the implementation, and perception on the acquired coding skills. Since all students who responded to the preliminary questions also participated in the follow-up part the demographics of the students are the same.

In the follow-up questionnaire, students expressed their attitudes regarding the C4G learning methodology and the implementation of activities using the 5-point Likert scale (1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree). According to the results (Table - 6), students find programming motivating and not challenging but not easy. They have fun with the programming activities and find that activities are relevant for learning programming. They understand presented concepts and had fun during conducted activities.

Statement	1-Strongly Disagree	2- Disagree	3- Neutral	4- Agree	5- Strongly Agree	Average Out of 5
1. I found programming challenging.	9,86%	19,72%	52,11%	14,08 %	4,23%	2.83

2. I found programming motivating.	1,41%	14,08%	45,07%	38,03 %	1,41%	3.24
3. I found programming easy.	5,63%	26,76%	46,48%	15,49 %	5,63%	2.88
4. I enjoyed programming.	0,00%	8,45%	29,58%	52,11 %	9,86%	3.63
5. I understood most of programming concepts.	8,45%	28,17%	39,44%	22,54 %	1,41%	2.80
6. Learning this way is fun.	4,23%	7,04%	23,94%	49,30 %	15,49%	3.64
7. I felt engaged with this way of learning.	5,63%	7,04%	30,99%	46,48 %	9,86%	3.47
8. The activities were relevant to learn.	0,00%	4,23%	15,49%	64,79 %	15,49%	3.91
9. At any time, it was clear what I had to do.	1,41%	5,63%	66,20%	25,35 %	1,41%	3.19
10. What I learned will be relevant for my future.	4,23%	11,27%	36,62%	33,80 %	14,08%	3.42

Table 6 – Satisfaction with C4G learning methodology

The participants again self-assessed the level of their programming skills on the scale from 0 - *I have never coded or programmed before* to 4 - *I can design a solution of a problem in the form of a program*. A total of 72 students solved the preliminary and the follow-up questionnaire so their self-assessment results were compared. Table-7 shows data on the difference between the self-assessed initial level and the self-assessed final level of programming skill. The number of statements for never coded before is decreased by 26.38% and number of novice programmer increased by 15.27%. According to the results, most of students self-assessed their programming skill level higher before participating in C4G activities. The analysis showed that the effect of C4G approach on coding and programming skills is supportive for students.

Level of programming skills	Preliminary Frequency	Follow-Up Frequency	Change in Percentage
0 - I have never coded or programmed before	55	36	-26.38%
1 - I am a novice programmer (just have basic ideas)	7	18	+15.27%
2 - I can code simple programs	10	11	+1.39%
3 - I am fluent in programming (can create a full program)	0	4	+5.55%
4 - I can design a solution of a problem in the form of a program	0	2	+2.78%

Table 7 - The difference between the self-assessed levels of programming skill

According to the results of the follow-up questionnaires;

- 43.05% students find the activities complex and 47.22% indicates that they need external assistance to play the game. However, 36.11% of the students thinks most people learn the C4G games in short time.
- Only 18.05% of them would like to play the game often and 48.61% of students think that they need to learn many concepts regarding coding before using C4G.
- 56.94% of the participants feel happy and 54.17% of them think the game is fun.

Students' comments

Students' comment was gathered after the activities in each class. They state their enjoyment with the C4G games and learning coding with this way. They are very satisfied with the received materials and provided guidance but indicate that they still need assistance to learn more. Some of the students criticise the volume of the game and the high technical requirements for playing the 3D game and asked the possibility of playing the game via phone or tablets at home.

Teachers' observations and comments

After the implementation activities, teachers were asked to express their qualitative opinions about the C4G methodology and the implementation process using the forms T1 and T2. In total, we gathered 14 responses from the participating teachers.

All of them stated that the students were interested and actively participated in the activities. Most of the students successfully completed all the tasks with the help of prepared materials. Video tutorials were especially useful to them. Teachers indicated that some students had technical difficulties in using the 3D game since it requires much of the processor and the graphic card. This situation made some students working slower.

Teachers' comments

Using the form T2, teachers reported on accomplishment of learning objectives, relevance, effectiveness and acceptance of the proposed methodology by the students, and the overall organization of the implementation.

The opinion of the teachers is that game-based learning is fun for students. They are motivated to solve tasks (problems) which makes this way of learning effective for learning programming. All teachers stated that the gamified learning and the serious game approach are very suitable and motivating for the students.

Game-based learning always attracts the attention of students and is particularly effective in areas where mental activities such as programming are intense. However, a little more attention should be paid to the fine line between the current game and missions. Especially middle school 5th and 6th grade students may get into the game and programming confusion and think that they are just playing games and cannot concentrate on tasks. Serious game design and approach with proof of concept can be problematic,

especially for low-level students (in groups where the concept of abstract concrete is not very clear). However, with the concept-proven serious game approach, the usability of coding training is extremely high. The approach of the coding4girls project seems positive, as gamification and design emerge as sub-skills in the acquisition of coding skills.

The validation activity of C4G activity was implemented online, so the insight regarding achieved fun by the students could not be complete. However, the teachers stated that it is easy to understand that students had fun and did not get bored from the activities. Besides, the students demanded more activities from the teachers.

DISCUSSION AND CONCLUSIONS

The validation process includes more than 10 hours of working with the participation of around one hundred students, teachers and experts. The first results from the students (S1) shows us that the online education has highly increased the time they spend online and the students meet digital devices at around their 9. Therefore, the students have about 4 years of experiences with computer or phone/tablets. Although their basic skills for the implementation of the C4G approach are adequate, only a few of them has previous coding or programming experiences. This situation is also confirmed by the results regarding the familiarity with programming concepts which showed that most students are not familiar with basic concepts such as statements and loops.

The Follow-up questionnaire (S2) applied to the students revealed that they found programming motivating and not challenging but not easy. They have fun with the programming activities and find that activities are relevant for learning programming. They understand presented concepts and had fun during conducted activities. When compared to the first self-assessment test, students' programming skills increased. For example, the number of students who selected their levels as novice programmer increased by 15.27%. The analysis showed that the effect of C4G approach on coding and programming skills is useful on students.

After the implementation activities with students, teachers reported that conducted activities enable students to achieve learning outcomes and at the same time had fun. Teachers think that creating games is a very effective way for students to learn programming concepts and they plan to apply the C4G methodology in the future as well. They observed

that C4G approach encouraged creativity and problem solving and students were motivated to complete the project (their own game) to the end. The external experts who participated in the validation activities agreed with these observations and support the application of game-based learning approach using visual programming tools for learning programming. They emphasized the good choice of topics of the projects included in the learning scenarios which are interesting to girls and encouraged them to apply their programming knowledge.

In conclusion, the C4G methodology is appropriate for students and enables the achievement of learning outcomes in an effective and fun way via serious game approach and positively contributes to the creativity of student via design thinking approach. The main problem were technical difficulties such as the volume of the game, need for a high capacity computers encountered by students who used the 3D game.

ANNEXES

S1. PRELIMINARY QUESTIONNAIRE FOR STUDENTS (in Turkish)

S1. ÖĞRENCİLER İÇİN ÖN ANKET

Bu anket, dijital cihaz kullanımınızı ve programlama deneyiminizi ölçmek amacıyla “KIZLAR İÇİN KODLAMA” Projesi çerçevesinde hazırlanmıştır. Proje, programlama becerilerini geliştirmek için ciddi oyun yaklaşımı geliştirmeyi hedeflemektedir.

Yanıtlarınızda ad ve soyadı bilgileriniz yer almayacak olup cevaplarınız yalnızca araştırma amacıyla kullanılacaktır. Zaman ayırdığınız ve işbirliğiniz için teşekkür ederiz.

Lütfen aşağıya okul numaranızı yazınız. Okul numaranız yalnızca bir sonraki anket ile eşleştirme amacıyla kullanılacaktır.

GENEL BİLGİ

Okul No: _____ Okul: _____
Yaş: _____ Sınıf: _____
Cinsiyet: E K

DİJİTAL CİHAZLARIN, İNTERNETİN VE VİDEO OYUNLARIN KULLANIMI

1. Bilgisayarları, tabletleri veya diğer dijital cihazları ne kadar süredir kullanıyorsunuz?	_____ yıl
2. Haftada kaç saat bilgisayar, tablet veya başka bir dijital cihaz kullanıyorsunuz?	_____ saat
3. Haftada kaç saat internet kullanıyorsunuz?	_____ saat
4. Haftada kaç saat bilgisayar/telefon oyunu oynuyorsunuz?	_____ saat

KODLAMA VE PROGRAMLAMA DENEYİMİ

Lütfen yanıtlarınızı daire içine alınız.

- Programlama seviyeniz nedir?
 - Daha önce hiç kod yazmadım veya programlamadım.
 - Acemi bir programcıyım (sadece temel fikirlerim var).
 - Basit programları kodlayabilirim.
 - Programlamada akıcıyım (tam bir program oluşturabilirim).
 - Bir problemin çözümünü program şeklinde tasarlayabilirim.
- Daha önce bir kodlama yaptıysanız aşağıdaki kavramlardan hangisi size tanıdık geliyor? Birden fazla yanıt işaretleyebilirsiniz.

€ Döngüler	€ Koşullar	€ İfadeler
€ Değişkenler	€ İşlemler	€ Olaylar
€ Çift yönlülükler		

Programlamayı öğrenmeniz için sizi motive eden nedir? Birden fazla yanıtı işaretleyebilirsiniz.

€ Motive değilim.

€ Bilgisayar dersinde başarılı olmak istiyorum.

€ Programlayabileceğimi diğer öğrencilere göstermek istiyorum.

€ Programlamada kariyer yapmak istiyorum.

€ Mantık problemlerini ve bulmacaları çözmekten zevk alırım.

€ Diğer: _____

S2. FOLLOW-UP QUESTIONNAIRE FOR STUDENTS (in Turkish)

S2. ÖĞRENCİLER İÇİN TAKİP ANKETİ

Bu anket, C4G öğrenme metodolojisinden memnuniyetinizi anlamak ve programlama/kodlama becerilerini edinmeye yönelik faaliyetlerin uygunluğunu ölçmek amacıyla hazırlanan bir takip araştırmadır.

Yanıtlarınızda ad ve soyadı bilgileriniz yer almayacak olup cevaplarınız yalnızca araştırma amacıyla kullanılacaktır. Zaman ayırdığınız ve işbirliğiniz için teşekkür ederiz.

Lütfen aşağıya okul numaranızı yazınız. Okul numaranız yalnızca “ön anket” ile eşleştirmede kullanılacaktır).

KOD ve GENEL BİLGİ

Okul No : _____

Okul: _____

Yaş: _____

Sınıf: _____

Cinsiyet: E K

C4G Öğrenme Yöntemi

3. Aşağıdaki ifadeleri yandaki ölçek ile değerlendiriniz.

	Tamamen katılmıyorum	Katılmıyorum	Kararsız	Katılıyorum	Tamamen Katılıyorum
a) Programlamayı zor buldum.	1	2	3	4	5
b) Programlamayı motive edici buldum.	1	2	3	4	5
c) Programlamayı kolay buldum.	1	2	3	4	5
d) Programlamayı sevdim.	1	2	3	4	5
e) Programlama kavramlarının çoğunu anladım.	1	2	3	4	5
f) Bu şekilde öğrenmek eğlenceli oluyor.	1	2	3	4	5
g) Bu öğrenme yöntemini ilgi çekici buldum.	1	2	3	4	5
h) Faaliyetler öğreticiydi.	1	2	3	4	5
i) Ders esnasında ne yapmam gerektiği belliydi.	1	2	3	4	5
j) Öğrendiklerim geleceğimle ilgiliydi.	1	2	3	4	5

ALGILANAN PROGRAMLAMA DÜZEYİ

Lütfen yanıtlarınızı daire içine alınız.

2. Şu anki programlama seviyeniz nedir?

a) Daha önce hiç kodlama veya programlama yapmadım.

b) Acemi bir programcıyım (sadece temel fikirlerim var).



- c) Basit programları kodlayabilirim.
d) Programlamada akıcıyım (tam bir program oluşturabilirim).
e) Bir problemin çözümünü program şeklinde tasarlayabilirim.

OYUN ORTAMININ KULLANILABİLİRLİĞİ

3. Aşağıdaki ifadeleri yandaki ölçek ile değerlendiriniz.	Tamamen katılmıyorum	Katılmıyorum	Kararsız	Katılıyorum	Tamamen Katılıyorum
a) Bu oyunu sık sık kullanmak istiyorum.	1	2	3	4	5
b) Oyunu karışık buldum.	1	2	3	4	5
c) Oyunun kullanımı kolaydı.	1	2	3	4	5
d) Bu oyunu kullanabilmek için bilgi sahibi bir kişinin desteğine ihtiyacım var.	1	2	3	4	5
e) Bu oyundaki çeşitli işlevler birbirine iyi bir şekilde entegre edilmişti.	1	2	3	4	5
f) Bu oyunda çok fazla tutarsızlık vardı.	1	2	3	4	5
g) Çoğu insan bu oyunu kullanmayı çok çabuk öğrenebilir.	1	2	3	4	5
h) Oyunun kullanımı çok zahmetliydi.	1	2	3	4	5
i) Oyunu kullanırken kendime çok güveniyordum.	1	2	3	4	5
j) Bu oyuna başlamadan önce birçok şeyi öğrenmem gerekiyordu.	1	2	3	4	5

OYUN DENEYİMİ

4. Aşağıdaki ifadeleri yandaki ölçek ile değerlendiriniz.	Tamamen katılmıyorum	Katılmıyorum	Kararsız	Katılıyorum	Tamamen Katılıyorum
a) Memnun hissettim.	1	2	3	4	5
b) Kendimi maharetli hissettim.	1	2	3	4	5
c) Oyunun hikâyesiyle ilgilendim.	1	2	3	4	5
d) Eğlenceli olduğunu düşündüm.	1	2	3	4	5
e) Oyunla tamamen konsantre oldum.	1	2	3	4	5



f) Mutlu hissettim.	1	2	3	4	5
g) Bana kötü bir ruh hali verdi.	1	2	3	4	5
h) Başka şeyler düşündüm.	1	2	3	4	5
i) Yorucu buldum.	1	2	3	4	5
j) Yeterli hissettim.	1	2	3	4	5
k) Zor olduğunu düşündüm.	1	2	3	4	5
l) Estetik açıdan hoştu.	1	2	3	4	5
m) Etrafımdaki her şeyi unuttum.	1	2	3	4	5
n) Kendimi iyi hissettim.	1	2	3	4	5
o) Bunda iyiydim.	1	2	3	4	5
p) Sıkılmış hissettim.	1	2	3	4	5
q) Başarılı hissettim.	1	2	3	4	5
r) Kendimi yaratıcı hissettim.	1	2	3	4	5
s) Bir şeyleri keşfedebileceğimi hissettim.	1	2	3	4	5
t) Eğlendim.	1	2	3	4	5
u) Oyunun hedeflerine ulaşmada hızlıydım.	1	2	3	4	5
v) Sinirli hissettim.	1	2	3	4	5
w) Baskı altında hissettim.	1	2	3	4	5
x) Zamanın nasıl geçtiğini anlamadım.	1	2	3	4	5
y) Zorlandığımı hissettim.	1	2	3	4	5
aa) Etkileyici buldum.	1	2	3	4	5
bb) Oyuna derinlemesine yoğunlaşabilirdim.	1	2	3	4	5
dd) Zengin bir deneyim gibi geldi.	1	2	3	4	5
ee) Dış dünya ile bağlantımı kaybettim.	1	2	3	4	5
ff) Zaman baskısı hissettim.	1	2	3	4	5
gg) Bunun için çok çaba sarf etmem gerekti.	1	2	3	4	5

S3. STUDENT'S COMMENTS (in Turkish)

S3. ÖĞRENCİ YORUMLARI	
Programlama becerilerini geliştirmek için C4G oyun temelli yaklaşımın uygulanmasından sonra, öğretmenler öğrencilerin sözlü nitel görüşlerini ve toplar ve bunları yazıya dökerler.	
GENEL BİLGİ	
Öğretmen: _____	Sınıf: _____
Okul: _____	Tarih: _____
GENEL ORGANİZASYON VE ÖĞRENCİLERİN ALGILARI	
Öğrencilere, uygulamanın genel organizasyonu, edinilen bilgilere ilişkin algıları, oyun temelli öğrenmenin uygunluğu ve etkinliği konusundaki algıları ve elde edilen eğlenceye ilişkin görüşleri hakkında sorular sorabilirsiniz.	
ÖĞRENME ZORLUKLARI VEYA SORUNLARI	
Öğrencilere kurs sırasında karşılaştıkları herhangi bir öğrenme güçlüğü veya sorunu ile bu sorun ile karşılaştıklarında ne yaptıklarını sorabilirsiniz.	
ÖĞRENCİLERİN C4G METODOLOJİSİNİN, ARAÇLARIN VE İÇİNDEKİLERİN NASIL İYİLEŞTİRİLECEĞİ HAKKINDA GÖRÜŞLERİ.	
İLGİLİ OLDUĞUNU DÜŞÜNDÜĞÜNÜZ GÖRÜŞ VE ÖNERİLERİNİZ	

T1. TEACHER'S OBSERVATIONS (in Turkish)

T1. ÖĞRETMEN GÖRÜŞLERİ	
Uygulama oturumları sırasında öğretmenler, öğrencilerin tepkilerini ve oyun tabanlı C4G yaklaşımını kullanarak kodlama becerilerini geliştirmedeki ilerlemelerini gözlemler ve belgeler.	
GENEL BİLGİ	
Öğretmen: _____	Sınıf: _____
Okul: _____	Tarih aralığı: _____
ÖĞRENCİLERİN KATILIMI	
Öğrenciler aktif olarak katılıyor mu? İşbirliği yapıyorlar mı? Eğleniyorlar mı? vb.	
ÖĞRENME ZORLUKLARI VE SORUNLARI	
Öğrenciler içerik veya donanımla ilgili sorunlar yaşıyor mu? Destek istiyorlar mı? vb.	
İLGİLİ OLDUĞUNU DÜŞÜNDÜĞÜNÜZ GÖRÜŞ VE ÖNERİLERİNİZ	

T2. TEACHER'S COMMENTS (in Turkish)

T2 ÖĞRETMEN DEĞERLENDİRMELERİ
GENEL BİLGİ
Adınız: Soyadınız: Okulunuzun Türü:
CODING4GIRLS YAKLAŞIMININ ÖĞRENCİLERİN ÖĞRENME HEDEFLERİNE ULAŞMALARINA KATKILARI NEDİR?
PROGRAMLAMA BECERİLERİNİN GELİŞTİRİLMESİNDE CODING4GIRLS ÖĞRENME YAKLAŞIMININ OYUN TABANLI ÖĞRENMEYE ETKİLERİ NELERDİR?
ÖNERİLEN METODOLOJİNİN ÖĞRENCİLER TARAFINDAN BENİMSENME POTANSİYELİ HAKKINDAKİ GÖRÜŞLERİNİZ NELERDİR?
CODING4GIRLS ÜRÜNLERİNİ KULLANIRKEN ÖĞRENCİLERİN KEYİF ALMA DÜZEYLERİ HAKKINDAKİ GÖRÜŞLERİNİZ NELERDİR?

UYGULAMA ETKİNLİĞİ HAKKINDAKİ DÜŞÜNCELERİNİZ NELERDİR?
CİDDİ OYUN YAKLAŞIMININ KULLANILABİLİRLİĞİ HAKKINDAKİ DÜŞÜNCELERİNİZ NELERDİR? (Coding4Girls Oyun Tabanlı, Tasarım Odaklı Eğitim Çerçevesi ile bağlantılı olarak)
BELİRTMEK İSTEDİĞİNİZ DİĞER HUSUSLAR NELERDİR?