



DigiEduHack Solution

Aalto Main Event - How make kids read again

Challenge: "Once upon a time there was a nation that stopped reading. The end." vs. And they read happily ever after

Booklistics - Your reading mentor

Reading can be a fun, collaborative game that students enjoy.

Booklistics turns distracted reading into fun, creative and collaborative games. During the game, the reading tracker measures key metrics and presents them to teachers for evaluation. Furthermore, the app measures emotions, so teachers can be certain which parts of the book the children enjoyed.

Team: Booklistics

Team members

Gergely Bihary, Miklós Knébel, Richárd Lengyel, Botond Sléber

Members roles and background

Gergely Bihary

Role: Full Stack Engineer

Tasks in 24h: Developed mobile application, backend and pitched the solution

Background: EIT Digital Cloud Computing MSc - Startupper, Developer, Sailor

Miklós Knébel

Role: Product designer

Tasks in 24h: Research on digital education, Preparation of the pitch deck

Background: EIT Digital Autonomous Systems MSc, Developer of educational robotics kit

Richárd Lengyel

Role: Data Scientist

Tasks in 24h: Developed web application for teacher's UI, defined relevant statistics to measure student's performance

Background: EIT Digital Autonomous Systems MSc, Robotics Teacher, Developer

Botond Sléber

Role: Cognitive AI engineer

Tasks in 24 hours: Developed sentiment analysis, worked on presentation

Background: EIT Digital Autonomous Systems MSc, Economics studies, Product designer

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Solution Details

Solution description

Booklistics is a reading tracker platform that enables fun collaboration between students while reading. The platform has two main parts, the mobile application (Android/iOS) for students and the management system for teachers (Web). The mobile app lets students choose a book from their library and track their read in real-time. After they finish a section, the game presents a creative drawing game, where the student is required to draw something based on the section they've just read. Our solution provides drawing games to improve our users creative skills, open-ended thinking and imagination.

The game connects the student with a classmate in real-time, who has to guess what the other is drawing. This deepens their understanding of the book and lets students compete and earn badges and rewards for completing challenges. Our concept also contains a recommendation system based on the pupils' instant feedback and rating of the read books.

The system for teachers allows the leaders of the class to answer important questions based on data, such as 'How is the class progressing?' or 'Who is lagging behind?'. Our Proof of Concept also

included an AI based sentiment analysis tool, that collected measurements of a student's emotions while they were reading. This information is also presented on the teacher's interface, showing the top three feelings the student experienced for a given section.

The solution can be used to enhance reading activity, since the gamified app lets students earn badges, motivating them to read and finish assignments. The app has been validated during the competition with multiple young students, who unanimously say that they would use such a service. In addition the challenge owners already expressed their willingness to continue development on a pilot project.

Measuring the improvement in the time pupils spent on reading is a key metric in the evaluation of the project's success.

Find the video of our solution in the attachments!

Solution context

The challenge that was proposed is the following: 'How to make kids read again?'. Children are reading less with every generation, with only three out of ten reading for fun nowadays. This is mainly due to changing habits of both children and parents - the TV and the internet are both easier to consume than a book, while the constant distractions of the digital age further reduce childrens' ability to focus on reading. The digital environment children grow up in today is exciting and provides infinite impulses, compared to the more relaxed and less exciting time that is spent on reading.

Therefore, our challenge is to turn reading into an equally fun activity as browsing the internet or watching a movie. This would encourage children to read more, and with that improve their cognitive abilities and learning skills. Multiple studies have shown a strong correlation between a child's mental health and the amount that they read - therefore it is crucial that children read enough. Furthermore, reading also enhances social skills and understanding - an ability that is essential in today's world.

We believe that if a game such as Booklistics makes an otherwise boring task into a fun game at the proper age, children will learn that reading is enjoyable. In addition, it increases exponentially their willingness to that exercise, therefore they would continue reading later on in life. We can achieve this with a combination of gamification and analytics - a groundbreaking concept in this field of education.

Solution target group

According to a recent study (Nielsen Survey, 2018), children are peaking in their interest for reading between the ages 8 to 10. Therefore, this is the most important age group to target with our solution, because if they are encouraged and get used to reading more at this age, they could continue in the future as well. To summarize, the primary target group of our app is 8 to 10 year old school children, while the scope of the platform is the classroom - 20 to 30 students and a teacher.

Students who are using the game to read are the ones primarily affected by the solution. They learn a healthy habit of reading more, while also playing a game and earning rewards. The benefit is also tangible for the teacher, since they get a tool that allows them to accurately measure reading progress in their class and can help lagging students before it's too late. Booklistics gives teachers a tool that has never existed before with this level of data and analytics in the classroom.

Booklistics can be used by classes of students to measure important metrics. However, if the whole school uses the platform, the insights it can provide get substantially more valuable. Going further, what if the whole country adopted Booklistics system in primary schools? The service would then be able to track reading analytics for each school, allowing stakeholders to compare schools, districts or neighborhoods based on reading performance. This kind of information is scarcely available today, but with the introduction of a platform like Booklistics, kids could really start to read again.

Solution impact

The ideal impact of our solution is an increased willingness to read for children. The app encourages this good habit with creative games and rewards. The impact can easily be measured with the analytics service for teachers. Here, they can track how much each student has read and how much they've enjoyed each section of a book. This is a very important opportunity for teachers, since nowadays they have no tools to measure individual and collective reading progress.

Further, our application's real-life impact will also be measurable in the following months. The creator of the challenge wants to continue with the development of the tool and to run a pilot project with a class in a school in Espoo, Finland. We believe that this will provide valuable feedback for further development of the platform and already shows that the potential impact and interest among schools is huge.

As the product spreads in both country and region we are able to compare, monitor and harmonize the education systems in Europe with the amount of acquired data. The widespread usage of the Booklistics platform could provide a unique opportunity of country level stakeholders to get insights about reading habits in different regions and react on them.

The ideal outcome of such a pilot project would be a measurable improvement in the students' reading habits. Such outcome could be measured, for example by tracking the quantity and quality of their book reading habits before and after the introduction of Booklistics in the classroom. We believe that through the gamified reward system, students will be encouraged to read more often and would read a book or an assignment much faster and with a deeper understanding than ever before.

Solution tweet text

The Booklistics platform enables collaboration between students, testing their reading skills in a gamified way, while teachers can analyse and get instant feedback on the class' performance and emotions.

Solution innovativeness

The Booklistics platform is unique in the way it combines reading tracking, analytics and gamification in one package. The app uses real-time technologies to let two students play with each other, seeing what the other draws, guessing and playing in a fun way.

The app also tracks different metrics while the student reads and plays, such as speed, attention and emotions. Speed is measured by tracking the start and end time of reading of each section, while attention could be measured by the times the student exits the tracker application while there is an active session ongoing. Further, the app tracks sentiments (Proof of Concept with a web-camera) with a computer vision based solution that provides further insights for teachers. This could later be bundled inside the application to track in real-time how exciting a certain section is for children.

The market for reading tracking is huge, there are more than 500.000 pupils affected by this in Finland alone. There are a couple of solutions that already exist on the market, such as 'ReadingRewards', but we believe that Booklistics' platform could be more comprehensive, including more detailed insights and a much better gaming and rewards experience than current market players. This can be achieved by developing the solution further in a close-collaboration with students and teachers - which is already happening with the pilot program in City of Kauniainen.

Solution transferability

The solution scales along two dimensions: it has additional benefits for using the solution in multiple schools, while there is also a possibility to adapt the system for different target groups. The earlier one is detailed in the sustainability section, while the possible adaptations are listed here.

The most obvious direction of transfer is from the primary age group (8-10 year old pupils) to older school kids. We focused on this age group as this is the time when children's reading habits peak, so it is logical to target them before the decline starts, but Booklistics could be used in later years of the school-system as well.

Challenging each other's reading habits in a gamified way naturally scales well for older age groups as well. One additional target group could be a group of friends, reading together, forming virtual book clubs. Similar solutions in other fields, such as sports (e.g. Strava, Endomondo) or language learning (e.g. Duolingo) proved to be motivating for adult users as well.

We have further plans to utilize the platform among elderly people. They love reading and often miss interaction with others in their daily life. As a platform for sharing their reading experiences it would enhance their social life and well-being.

Solution sustainability

The challenge was proposed by the City of Kauniainen and they were impressed enough with our solution prepared just in 24 hours, that we have already agreed on the first meeting to start working together on the pilot project. This pilot project would last for 3 months and we plan to have a market ready product at the end of the period.

Long-term sustainability includes nationwide extension of the product, starting in Finland and promoting it in Nordic states while exploring the options of getting all the European Union countries on track to use our solution.

With the widespread use of Booklistics, we would be able to compare, monitor and harmonize the education systems in Europe with the amount of acquired data. City or ministry level leaders would have the option to have insights of the reading habits and abilities of each region, type of school, or individual educational institute. This would enable the comparison of different teaching methods and analysis of other parameters' impacts on reading.

Therefore, we believe that the long-term sustainability of the Booklistics platform is viable:

- It requires small capital investment for schools to get started with - they only need an app and do not need to digitalise books or invest into new equipment.
- The platform can scale both vertically inside one school or horizontally between multiple schools or regions.
- The target group can be later extended for adults or elderly, a market that has already proved

to be profitable to similar applications (eg.: Duolingo).

Solution team work

We are friends with previous hackathon experience. We loved thinking about the problem, elaborating and verifying our solution with the local teachers and pupils. Everyone had his own role in the development of the proof of concept during the 24h hackathon, where we covered well the needed skills for a successful competition.

We certainly continue working as a team in the future, preferably working on this project. We were offered to continue its development through a three month long pilot program in a school by the City of Kauniainen.

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