



STARFISH

EDUCATION FOUNDATION

Education Innovation and EdTech Report - 2018

Starfish Education Foundation



STARFISHLABZ



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Introduction

This report describes Starfish Education Foundation's programs, activities and achievements in the area of education innovation and EdTech during the year 2018, as well as plans for the year 2019. These activities were implemented by Starfish Innovation, a Thailand-based social enterprise, under the guidance of the Foundation's CEO, Dr. Nanthaporn Seributra.



UX workshop for Starfish Labz, March 2018. Photo courtesy of Morphosis App Co, Ltd.

Starfish Maker



Starfish Maker, an innovative education outreach program designed to develop capacity for educators and learners in Thailand through setting up “makerspaces”, is achieved by providing academic services, professional development for educators, and opening spaces for children, schools, communities and schools to use free of charge. You can learn more about the specifics of the overall program at <https://www.starfishmaker.org/>.

This section is specifically related to education outreach activity services that Starfish Innovation Co, Ltd provided to Starfish Education Foundation in 2018, as well as its plans for 2019.

Achievements in 2018

We facilitated an Education Outreach program that resulted in a memorandum of understanding between Starfish Innovation, Starfish Education Foundation and 64 public schools (50 in Chiang Mai, 4 in Chiang Rai and 10 in the Bangkok area). We are working with these schools to establish makerspace areas in each school, for use with their students as well as any other groups that the school wishes to provide it to. Combined, these schools account for 2,374 students participating in the program, and thus far 101 teachers have been identified as “Maker Coaches”.

From these 64 schools, six of them have been assessed as capable of being in the first round of Starfish Maker pilot schools. Upon completion of setup and successful operation, these schools will then serve as demonstration sites for other schools in each respective local area, at first hosting periodic student groups, and eventually assisting in the setup of makerspaces at those other schools as well.

We also held introductory trainings, core trainings, Thai government workshops, and participated in education exhibitions throughout the year. These 21 events resulted in reaching 1,693 educators and administrators.



Photo of MOU signing ceremony for 50 Chiang Mai area schools.

Finally, an online social media presence (from both a Starfish Maker Facebook page and a page of a local partner, Starfish Country Home School Foundation) actively promoted the Starfish Maker program and reached over 3,900 people, conservatively.

Future Plans for 2019

As we progress into 2019, we aim to continue the development of the six pilot schools in Chiang Mai to improve their capacity and output. After reaching a satisfactory level of quality, these schools will then serve as new demonstration sites, which will help the remaining MOU schools proceed in their Starfish Maker rollouts.

In this fashion, we can ensure a positive outcome will result for as many schools as possible.

Starfish Labz



Professional Learning Management Platform for Thai Educators

The need for a learning management system that is tailored towards teachers in the Thai education system was identified early on as a space in which we can usher in significant improvements and positive outcomes in Thai society. With that in mind, Starfish Labz was born.

Starfish Labz is an online platform that is used to administer, deliver, and track content, pedagogy and learning approaches for educators. Those educators can learn, share and use it as a digital tool for authentic assessment to measure the impact of their practices in a real-life learning environment. The platform is also designed to collect data for research purposes on different professional learning models.

The development of its broader components of **work processes and tools**, **user interface**, and **user experience** are important to understand before diving into what the program's 2018 achievements were, and what plans are in store for 2019.

Processes, Tools and Tech

Our tech team used Agile Software Development practices while working on Starfish Labz. Essentially, these are methods that allow solutions to evolve through collaboration between self-organizing, cross-functional teams that utilize context-specific practices.

Various types of collaboration and communication were used, including a periodic team scrum, maintaining interaction based on product backlog, and holding a weekly “sprint” meeting. During these interactions, tools such as Craft (product management), Invision (product design and discussion), Slack (information sharing) and Bluejeans (video conferencing) were used to push progress and collaboration.



The technical development stack, or combination of software and programming languages used in creating Starfish Labz, can be seen here:

- LEMP Development Stack using latest versions of software

- Linux (Ubuntu 18.04)
- Engine-X (nginx)
- MySQL 5.7
- PHP 7.2
- Symfony 4



Meanwhile, the technical infrastructure suite we used for production can be seen here:

- Infrastructure

- DigitalOcean for Cloud Computing
- Amazon Web Services S3 for Cloud Storage
- CloudFlare for Content Distribution
- Google Analytics for Traffic Analytics
- MailGun for Transactional Emails



Additionally, best tech practices such as the Joel Test (see below) were employed to ensure quality and consistency in our outputs.

Joel Test score: 12/12

The [Joel Test](#) is a twelve-question measure of the quality of a software team.

- | | |
|--|--|
| ✓ Do you use source control? | ✓ Do you have a spec? |
| ✓ Can you make a build in one step? | ✓ Do programmers have quiet working conditions? |
| ✓ Do you make daily builds? | ✓ Do you use the best tools money can buy? |
| ✓ Do you have a bug database? | ✓ Do you have testers? |
| ✓ Do you fix bugs before writing new code? | ✓ Do new candidates write code during their interview? |
| ✓ Do you have an up-to-date schedule? | ✓ Do you do hallway usability testing? |



Another important practice that we used throughout the production process is Responsive Design. This basically means that we worked from the start to make Starfish Labz compatible for as many types of web technology (HTML5, CSS3, Javascript) as possible, with the end result of it being compatible with nearly all desktop, tablet and mobile devices.

Minimum Viable Product (MVP) Strategy

- Goals “ Roll out engaging-online learning platform to at least 50 Thai schools, 100 teachers for 2018 education year”
- Initiatives
 - To be centralised online learning content for teacher professional development
 - To build user engagement through fun & user friendly experience

In order to define the product, we ran a focus group that included educators and administrators in the Thai education system, including from the Ministry of Education, particularly their Bureau of Innovation in Schools. We wanted to gauge how teachers use technology in their work, what technologies they feel comfortable adopting, or if they use digital technology in the first place for both their and their student’s development.

This provided us with very realistic and useful feedback on what is actually wanted and needed at the ground level, and therefore we were able to tailor Starfish Labz towards meeting those needs.

Of equal importance was the ability for us to localize the platform to be useful in a local Thai context. There are a number of existing international learning management platforms that were already available but are lacking in regards to functions, visual cues and content that help a Thai user feel as if they are in a familiar and productive learning environment.

User Interface (UI)

Product Features Released

• Content management: Course, Lesson, Activity,	• User management & Authentication
• Assessment management: Quiz, Assignment,	• User roles & rights access management
• Peer assessment/assignment review flow	• School management
• Skill & point based management	• Education service area management
• Teacher Profile, Avatar	• Multi languages & Translation tool
• Certificate	• User audit log & System email
• Notification & Message	
• Teacher & School directory	



An overview of product features released. Front-end releases shown in the left column, back-end releases in the right column.

A front-end user begins interacting with Starfish Labz at the login page. Upon registering an account and logging on, they are greeted with a number of features and options to choose from. The top right corner of the screen holds Profile and Notifications options, while the top navigation bar has Courses, a Directory of the educators and schools participating as users in Starfish Labz, and a Frequently Asked Questions section.

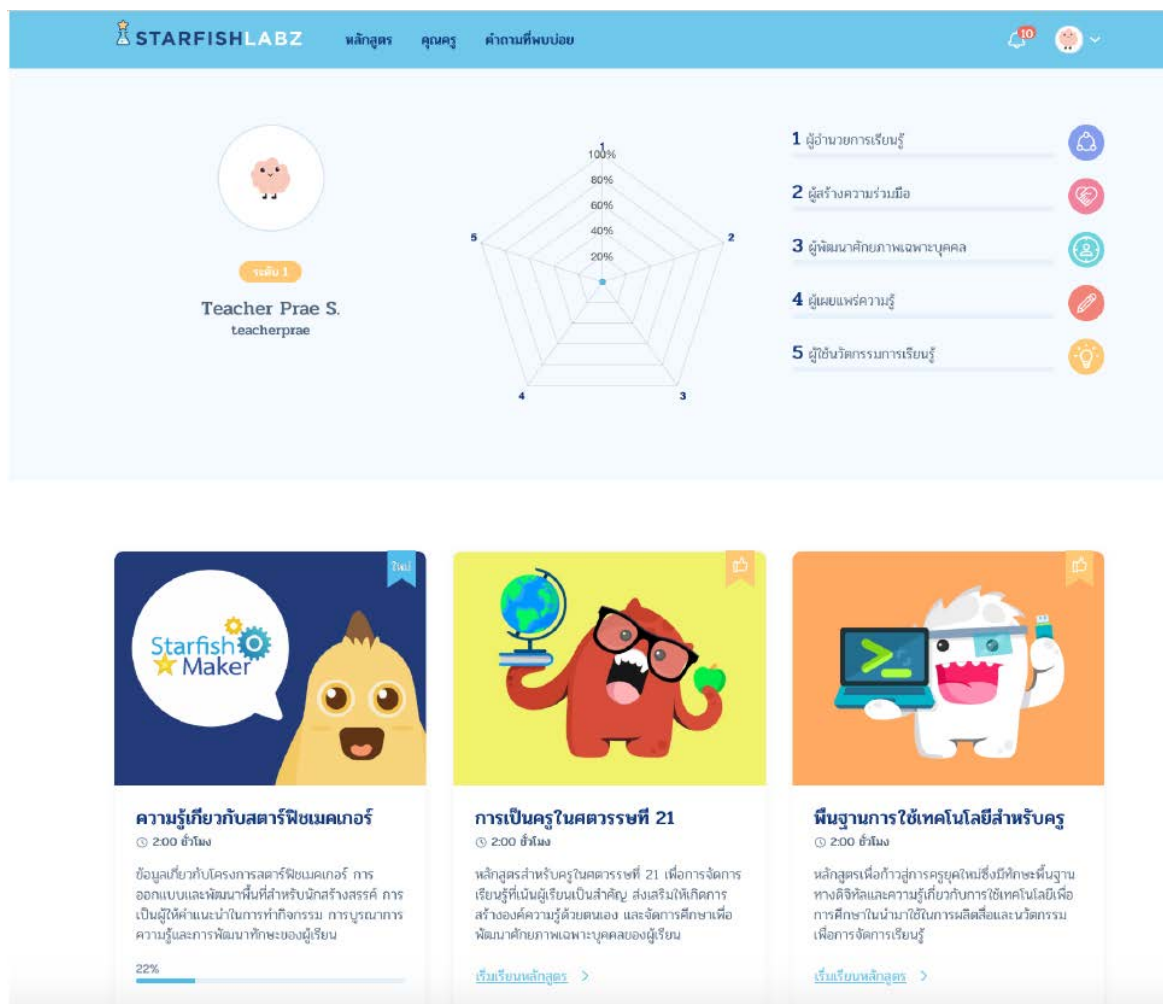
Central to the page, however, is the user's profile summary and progress status. An infographic in the shape of a spider web shows the results from each completed lesson in regards to five different categories. These categories are skills that have been identified as 21st century skills for teachers – **Facilitating, Collaborating, Personalized Learning, Authoring and Publishing, and Innovation Skills**. All lessons and content have been designed to build capacity in these five categories. The visual progress status allows users to identify opportunities for improvement.

At the bottom of the page, there is a list of the various learning courses available. Each module contains a balance of lessons, activities, quizzes, and peer review.

Activities are not merely designed to have a user complete a reading or answer in a text box; rather, they also encourage real-life actions and sharing to take place - for example, setting up a makerspace corner in their classroom, then recording a video walkthrough and posting it on the Labz site for other users to view.

There are also quizzes that reinforce readings and activities based on the five progress categories. After an initial attempt, teachers are allowed to try and improve their score by re-testing and viewing their results.

Finally, the peer review portion of each course is an important form of collaboration that requires evaluating and providing feedback on other user's activity results. This gives users an opportunity to see their peer's examples of work, and also a valuable chance to evaluate their own ideas and work in relation to others.



A screenshot of a Starfish Labz user's home page, complete with the "spiderweb" progress status graphic.

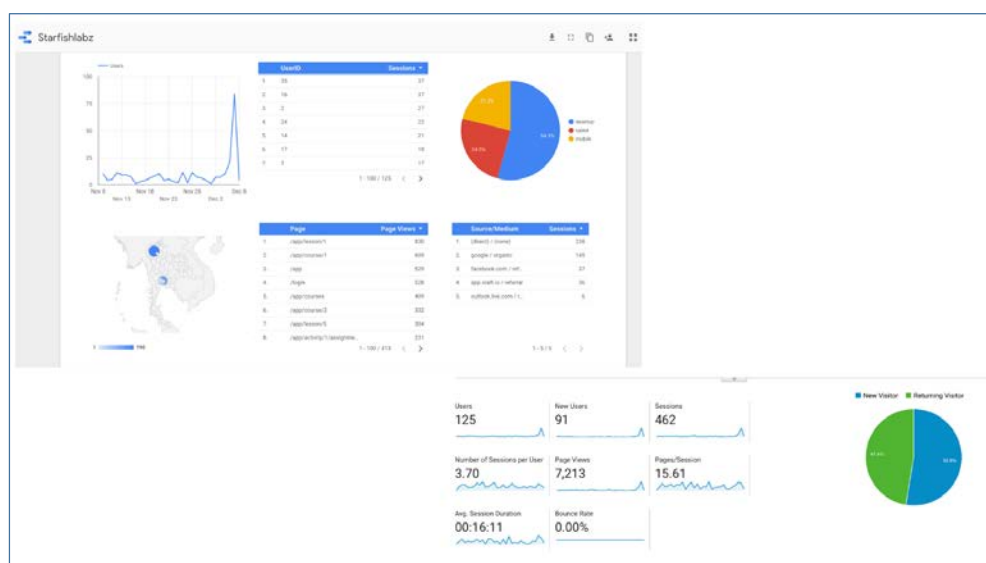
Upon the completion of all courses, a certificate is provided to the user.



Meanwhile, a back-end user has access to features that help them to administer the site, and gain valuable insights and data from Starfish Labz and its users.

Admins of the page have the option to manage user roles, user visibility in the directory, create user accounts, reset passwords, and enable or disable accounts. Content can be uploaded and arranged in the Courses section. Other features such as multiple languages, a translation tool, user audit logs and an email system are also available for use.

As touched upon earlier, we have set up Google Analytics tools to assist us in evaluating user and course metrics. The resulting data is a powerful component of adjusting and improving services in the future.

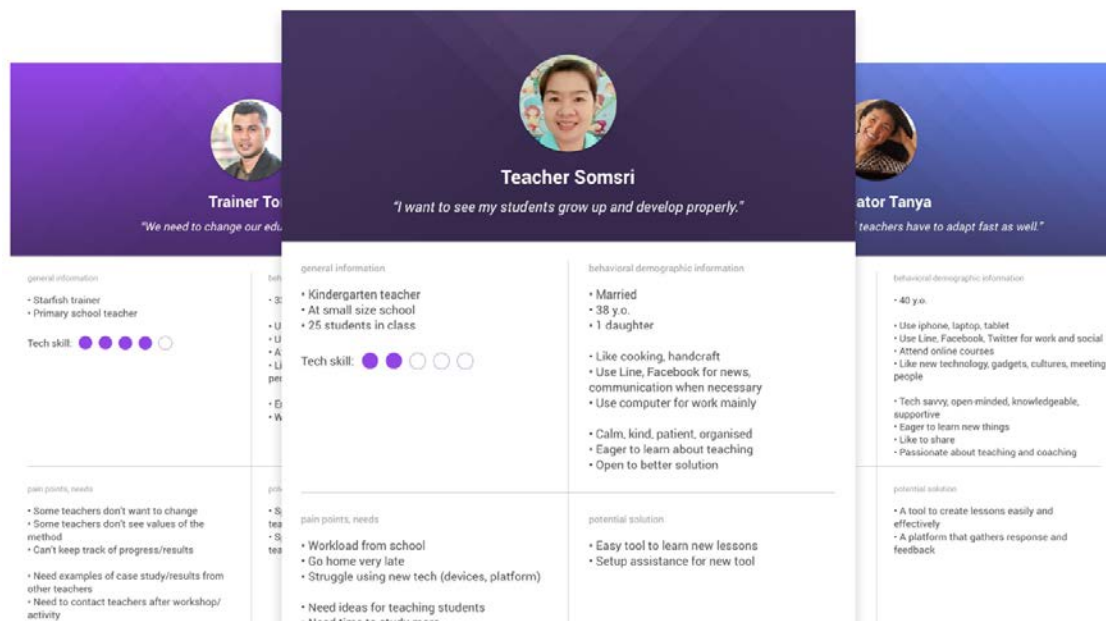


A screenshot of the data analysis consoles for back-end users, Starfish Labz.

User Experience (UX)

In March 2018, we engaged Morphosis Apps Co, Ltd to conduct UX research for use in the Starfish Labz project. We wanted to know and understand what users wanted, what features to implement in order to achieve a Minimum Viable Product, and how to structure platforms in a way that is realistic, easy-to-use, and effective for Thai users.

This process began by holding focus groups with Thai educators, local Starfish staff, and representatives from the Thai Ministry of Education. Based on this activity, we were able to create a set of customer journey examples that revealed needs, expectations and norms for the target group of educators in the Thai education system.



Example of customer journey profiles resulting from focus groups.

After this initial stage, the Starfish Labz logo and branding were worked on. With this completed, the laying out of a structure for content and functionality was prioritized, taking into account user needs and user journeys.

After creating a number of original pages based on the above structure, we then went back and refined those existing pages, and created several new pages as well. A final stage of our collaboration with Morphosis was to design the back-end page structures, front-end community pages, and a final revision of all pages.

Achievements in 2018

Starfish Labz was launched for use by educators from Starfish Maker MOU schools in November 2018. Per agreement with Starfish Education Foundation, Starfish Innovation's aim in 2018 was to meet the following requirements:

Requirements 2018			
No.	Features/Modules	Output	Delivered
1	Teachers	Teacher profile, avatar, badge/certificate, portfolio	Teacher Profile, Avatar, certificate, Teacher directory
2	Contents	Courses, Lessons, Activities, Content test	Courses, Lessons, Activities, Content & Media management, Quiz management, Assignment Management
3	Admin Staff	Manage all users and contents	User Management, User Roles & Access right management, User Authentication, System emails
4	Students	Student Profile and report	Priority shift
5	Classes / Schools	Manage school, classroom, student, teachers	User Group Management, School Management, Education Service Area Management, School directory
6	Communication / Engagements	Notification, chat, online community	Notification, Message
7	Gamification	Professional development journey map	Skill & point based management, User level
8	Tracking and Report	Track user engagements and provide reports	GA & User engagement tracking & report
9	Additional feature		Multi Language & Translation Tool, User Audit Log
10	Additional feature		Assignment Review Flow, Assignment Rubrics
11	Additional feature		Static Content - FAQ, T&C, Privacy Policy

Requirements 1-8 were completed with the exception of Student Profiles and Reports, which will be touched upon in the next section. Additionally, #9-11 were extra features not part of the original agreement, which resulted from our use of the Agile Software Development design practice.

Plans for 2019

Now that Starfish Labz has been successfully launched, we have a number of goals for 2019 that help to expand and strengthen its usage. In essence, we want to position Labz as **the go-to education technology and innovation learning management platform for Thai educators**.

We aim to expand access of Starfish Labz to the public, rather than only to schools under the MOU to use Starfish Maker. By establishing an “Idea Starter” library, educators can share and learn about education technology and innovation. This way, excellent teachers with excellent habits can be highlighted and shared with the community-at-large.

A public registration page will also be set up, and enhancements to “gamify” the platform will be added, including a points-based collection, a rewards catalogue via CSR partners, and a rewards item stock and management system.

Product Roadmap 2019

Enhancement Assignment UI

- Assignment submission & review status UI
- Course & Lesson card UI
- Lesson & Activity & Assignment UI

Public Registration

- Homepage revision
- Public registration page
- New school entry flow & management
- User Roles & Permission review

Teacher Professional Learning Community Log book

- Learning log book
- PLC report



Also, we have a plan to launch a separate app to provide educators with the ability to create and maintain student portfolios, in order to assess and evaluate student performance and progress.

Product Roadmap 2019

VDO Content section

- Video channel page
- Video detail page
- Video Tags
- SEO

Gamification enhancement

- Point based collection
- Reward catalogue
- Reward item stock & management

Student Portfolio

- Authentic Assessment
- Student skills management & points
- Student report
- Student group & management
- Mobile apps: iOS & Android for tracking tools



Professional Development

Achievements in 2018

Per agreement with Starfish Education Foundation, Starfish Innovation Co, Ltd. as the service provider in 2018 endeavored to provide the following services:

- Provide consultation on the development of education technology products, pedagogies and assessment as per agreed milestones.
 - Mobile Device Management – design processes for using a Device Management system for Starfish Country Home School Foundation.
 - Starfish Labz – the development of courses and course content, assignment review, feedback and answering any questions from end users, development of a system for collecting user needs, generating new users / providing instructions and user manuals for 10 public schools as part of the Starfish Maker program in the Bangkok area.
- Provide professional development materials and workshops to appointed audiences as required. We completed the following trainings and workshops:
 - iTunesU Course for Maker Coaches
 - iTunes U Course for using iPad to support learning activities
 - Eight “Introduction to Starfish Maker” workshops
 - Kick-Off workshops for Thai public schools
 - Introduction to Starfish Labz workshops
 - Trainings on how to integrate makerspaces into school lessons

In total, the professional development team ran **31 separate workshops with a total of 944 teachers and educators** in participation from Starfish Country Home School Foundation and Thai public schools under MOU with Starfish Education Foundation and Starfish Innovation Co, Ltd.

Our team also facilitated the training and setup of the Starfish Maker program in ten Bangkok-area schools that signed a memorandum of understanding in late 2018. This process included introducing the Starfish Maker concept to interested school directors and academic leaders, organizing a MOU signing ceremony, establishing the policies and goals of the project, initial kick-off and Makerspace setup trainings, basic surveys of teachers, school profile compilation and consulting, and a Maker Coach training rollout for these schools.

Finally, our professional development team played a crucial role in coordinating with the Research Institute for Policy Evaluation and Design (RIPED) from the University of the Thai Chamber of Commerce to start a research assessment project that will more clearly define the academic and real-life outcomes for children participating in the Starfish Maker program.

The 2018 outputs from the RIPED team include:

- The preparation of observation data forms for schools participating in the Starfish Maker program
- An online observation form for Starfish Maker classroom arrangements
- The creation of a data collection questionnaire that includes
 - testing of child development in the cognitive and non-cognitive fields
 - queries of **teacher** understanding of child development in the cognitive and non-cognitive fields
 - queries of **parental** understanding of child development in the cognitive and non-cognitive fields
- Interviews of teachers and parents completed from 7 out of the 28 total schools being researched, as well as analysis of the challenges experienced during those interviews (including Thai language barriers for some parents, and some schools restricting access to students, parents and/or teachers)

Plans for 2019

We have a hefty list of services and activities in store for 2019, which all add up to mean that the professional development team will be a key driver for Starfish Labz in schools.



- Developing teachers to use technology to support teaching and learning.
- Use of Makerspace for support the learning activities.
- Facilitating and Classes Control Techniques
- How to creating learning materials and assessing the quality of learning media.
- Creating a student's portfolio for develop individual learners' potential.
- STEM Education and Activities design for integrating knowledge for children
- Computational Thinking and Coding for Kids

In addition to continuing IT consultancy for Starfish Country Home School and local Thai government schools in regards to mobile device management, we have also gradually been shifting into a professional development consulting team for Starfish Maker staff and participants as well. Using a core “Consulting and Mentoring Toolbox”, our team will develop teachers to use technology in supporting teaching and learning, as well as on the integration of STEM education and activities for children.

Our work on the courses and content for Starfish Labz will also continue. We aim to create 12 new in-house online courses, attract 1000 new users, hold 30 workshops, and create 24 Facebook EdTech articles for use when the eventual public launch occurs. We are also pushing for the suite of Starfish Labz learning courses to be certified by the Thai Office of Basic Education Commission, therefore adding a crucial component that will drive interest from all educators and teachers in Thailand to use the Labz system.

Other plans include the continuance of the RIPED research project and therefore achieving at least one national publication on Education Research, as well as serving as an outreach team for corporations interested in CSR opportunities that are appropriate fits in our plans to launch Starfish Labz to the public.