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METHODS AND PRACTICES FOR INTRODUCING PRIVATE SPACE EDUCATION PROGRAMS INTO JAPANESE SCHOOLS

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Abstract

Private space travel began in 2021, and more and more children are becoming interested in space travel. However, there are no classes in the Japanese school curriculum to learn about civilian space exploration. In addition, Japanese children are too busy studying for school tests, lessons, or entrance exams for higher education, making it difficult for them to maintain their curiosity about space travel. Therefore, to solve these problems, the 2022 paper outlines a" A SPACE EDUCATION PROGRAM TO SOLVE THE SHORTAGE OF COMMERCIAL SPACE TEACHERS IN JAPANESE SCHOOLS" After the publication of the paper, the Star Kids International Program (SKIP), a tutoring school, has started space education activities to introduce the above space education program to school sites. Specifically, we will visit mayors and boards of education of local governments and hold lectures by commercial astronauts at elementary and junior high schools to implement the program to give children dreams. And to maintain the curiosity about space travel aroused by the lectures, we will create a space education online community to provide regular opportunities to learn about commercial space development and interact with commercial astronauts. Furthermore, by inviting children from other countries to join this space education online community, we will also provide opportunities to interact with children across borders on the theme of civilian space travel. We will also invite children from other countries to join this space education online community.
In this paper, we report on the issues involved in implementing a private space education program in Japanese schools and the results of our examination of its educational effects.

Keywords: Private Space Education, Education in Japan, Online Education, SKIP

Nomenclature
The Period of Integrated Study :
Classes that cultivate the qualities and abilities to solve problems and think about one's own way of life through cross-disciplinary and comprehensive learning, using an inquisitive view and way of thinking in response to a rapidly changing society.

Acronyms/Abbreviations
SKIP: Star Kids International Program

1. Introduction

I teach science at a cram school. I have been feeling a sense of crisis about the negative effects of entrance examinations in Japanese education. As a way out, I devised a private space education program as part of the classes at my online tutoring school, SKIP (Star Kids International Program).

Then, in a 2022 paper, I presented "A Space Education Program to Solve the Shortage of Teachers on Commercial Space by the Private Sector in Japanese Schools".
Since then, SKIP online school has started activities to introduce the above-mentioned private space education program to schools.
Specifically, 1. lectures by commercial astronauts are held at schools, 2. online space education events are held for parents and children, 3. space education online information sessions are held for schoolteachers and parents, and 4. visiting space education classes are held at schools.

2. How to introduce space education programs into school education

2.1 Conducting lectures by private astronaut.

We visit mayor and board of education in local municipalities to plan and propose lectures at local elementary and junior high schools, which will be held in the winter of 2023.

My municipality has 5 elementary schools and 2 junior high schools. The total number of students is over nearly 4000.
By holding lectures at schools, we can encourage many children to have dreams and hopes for commercial space travel at the same time.

After the success of the lecture in one municipality, we will conduct similar lectures at schools in neighbouring municipalities. In this way, we can give very large numbers of children dreams and hopes for civilian space travel.

Fig. 1 Director of Education in a local municipality (Middle)

2.2 Online Educational Program for Parents and Children

To keep children's curiosity about commercial space travel alive, we offer a commercial space education program that can be taken online.

By having both parents and children participate in the program, we make it easier for parents to gain an understanding of private space travel.

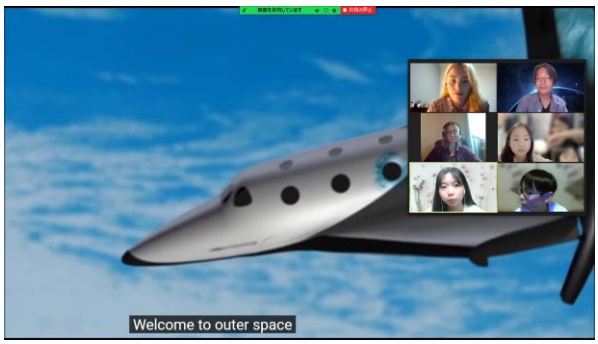

Fig. 2 Online educational programs for parents and children

2.3 Online Space Education Information Sessions for Educators and Parents

Even if children become interested in space through lectures by commercial astronauts or online space education programs, if teachers and parents are not interested in space, children's curiosity about space will be crushed at school or at home.

Therefore, we will try to gain understanding of space education by holding information meetings for educators and parents.

2.4 Space Education Classes during The Period of Integrated Study

In the Japanese school curriculum, there is a class called "The Period of Integrated Study". In this class, work related to space is introduced. By the time children become adults, they will be able to go to space more easily than now. Therefore, we would like to encourage children to think about what kind of work they would like to do in space in the future, and to develop an interest in space.

2.5 Use of civilian spacecraft education and training simulators converted from camping trailers and dome houses

The ASTRAX civilian spacecraft education and training simulators, created by converting camping trailers and dome houses, will be installed on vacant land.
Since these simulators are mobile, hands-on sessions can be held at elementary and junior high schools.

By holding a private spacecraft education and training simulator hands-on learning session at schools where lectures by commercial astronauts were held as described in Section 2-1 above, visitors can have a realistic experience of commercial space travel.

Fig.3 ASTRAX Commercial Spacecraft Education and Training Simulator

3. Internationalization of Private Space Education Program

In March 2023, we visited a junior high school in Finland to conduct a private space education program.
According to a questionnaire after the program, the program strongly aroused their curiosity about space and made them feel closer to space.

In Singapore and Malaysia, we are also moving toward joint implementation of space education with educators.

Fig. 4 Private Space Education Program in Finland

4. Problem and solution

4.1.1 Problem 1

According to the questionnaire survey after the space education program, the program stimulated the children's curiosity about commercial space travel.
However, a survey of the behavior of the children after the program shows that the curiosity aroused by the program disappears within about a week, as they are busy with daily homework and tests.

4.1.2 Solution 1

As a solution to this issue,
we propose to create an online group for participants of space education programs and lectures using social networking services, etc., and to maintain their curiosity about space by regularly interacting with their peers who are interested in commercial space travel.

4.2.1 Problem 2

Many parents in Japan do not want to spend money or time on things that are not related to schoolwork or test scores. Therefore, even when space education events are announced, it is difficult to attract participants.

4.2.2 Solution 2

To solve this issue, we will internationalize the space education online event. By having students from overseas participate in the event and improving their language skills, we will make it easier to gain the approval of parents.

4.3.1 Problem 3

Japanese administrative agencies (e.g., Boards of education in local municipalities) are very conservative, which makes the progress of the project slow.
It takes several months to a year to get approval from the responsible authorities for a lecture by a commercial astronaut or a program to dispatch instructors for space education.

4.3.2 Solution 3

Japanese administrative agencies are conservative and slow to make progress on first-time projects, but once a precedent is set, the second time is quicker. Also, if you can build a relationship of trust with the government agency, the conversation can proceed relatively quickly. Therefore, by ensuring the success of the first project, we aim to build trust with the

government agencies and realize the next project as soon as possible.

4.4.1 Problem 4

Administrative permission is required to bring a camping trailer or dome house onto public school property, but the administrative process can be very lengthy.

4.4.2 solution 4

Japanese administrative agencies are conservative and slow to make progress on first-time projects, but once a precedent is set, the second time is quicker. Also, if you can build a relationship of trust with the government agency, the conversation can proceed relatively quickly. Therefore, by ensuring the success of the first project, we aim to build trust with the government agencies and realize the next project as soon as possible.

5. Conclusion

When a private space education program is implemented, not only children, but also their parents and teachers, take a strong interest in the program. It is also expected to have an educational effect in stimulating curiosity about science and mathematics.

However, we have found that in order to introduce the program to Japanese schools, we need to prepare for the long term. This is because Japanese schools have a packed schedule, and it is necessary to negotiate with local government educators and schools a year in advance to secure class time for private space education. In addition, continuous and active involvement in space is essential to sustain and promote the educational benefits of the program. This is because Japanese children are so busy with their schoolwork that they do not have time to maintain their interest in space.

Therefore, we will create a system that allows children to easily and continuously participate in space events to maximize the effectiveness of private space education.

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民間宇宙教育プログラムを日本の学校現場に導入する方法と実践

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Abstract

Private space travel began in 2021, and more and more children are becoming interested in space travel. However, there are no classes in the Japanese school curriculum to learn about civilian space exploration. In addition, Japanese children are too busy studying for school tests, lessons, or entrance exams for higher education, making it difficult for them to maintain their curiosity about space travel. Therefore, to solve these problems, the 2022 paper outlines a" A SPACE EDUCATION PROGRAM TO SOLVE THE SHORTAGE OF COMMERCIAL SPACE TEACHERS IN JAPANESE SCHOOLS" After the publication of the paper, the Star Kids International Program (SKIP), a tutoring school, has started space education activities to introduce the above space education program to school sites. Specifically, we will visit mayors and boards of education of local governments and hold lectures by commercial astronauts at elementary and junior high schools to implement the program to give children dreams. And to maintain the curiosity about space travel aroused by the lectures, we will create a space education online community to provide regular opportunities to learn about commercial space development and interact with commercial astronauts. Furthermore, by inviting children from other countries to join this space education online community, we will also provide opportunities to interact with children across borders on the theme of civilian space travel. We will also invite children from other countries to join this space education online community.
In this paper, we report on the issues involved in implementing a private space education program in Japanese schools and the results of our examination of its educational effects.

アブストラクト

2021 年に民間宇宙旅行が始まり、宇宙旅行に興味を持つ子供たちが増えてきています。しかし、日本の学校カリキュラムの中には、民間宇宙開発について学べる授業がありません。また日本の子ども達は、学校のテストや習い事、あるいは進学のための受験のための勉強で忙しく、宇宙旅行に対する好奇心を維持することも難しい現状です。そこで、これらの問題を解決するため、2022 年の論文では、「日本の学校における民間による商業宇宙に関する教師不足を解消するための宇宙教育プログラム」の概要を発表しました。論文発表後、学習塾 SKIP（Star Kids International Program)では、上記の宇宙教育プログラムを、学校現場に導入するための宇宙教育活動を開始しています。具体的には、自治体の市長、教育委員会を訪問し、小学校や中学校で民間宇宙飛行士の講演会を開催して、子ども達に夢を与えるプログラムを実施します。そして、講演会によって喚起された宇宙旅行に対する好奇心を維持するため、宇宙教育オンラインコミュニティを作り、定期的に民間宇宙開発について学び、民間宇宙飛行士と交流できる機会を提供します。さらに、この宇宙教育オンラインコミュニティに、国外の子ども達を招待することで、民間宇宙旅行をテーマに、国境を越えた子ども達との交流の場も提供していきます。
本論文では、民間宇宙教育プログラムを日本の学校で実施する際の課題点と解決策についての検証結果を報告します。

Keywords: 民間宇宙教育、日本の教育、オンライン教育、SKIP

Nomenclature

総合的な学習の時間（総合学習）: 変化の激しい社会に対応して、探求的な見方、考え方を働かせ、横断的、総合的な学習を通して、課題を解決し、自己の生き方を考えていくための資質、能力を育成する授業

Acronyms/Abbreviations

1. はじめに

私は、学習塾で理科を教えています。日本の教育における受験の弊害について危機感を感じていました。そこで、打開策として、私が運営するオンライン学習塾 SKIP（Star Kids International Program）の授業の一環として、民間宇宙教育プログラムを考案しました。

そして、2022 年の論文で、「日本の学校における民間による商業宇宙に関する教師不足を解消するための宇宙教育プログラム」を発表しました。

その後、学習塾 SKIP では、上記の民間宇宙教育プログラムを、学校現場に導入するための活動を開始しています。具体的には、①民間宇宙飛行士の講演会を学校で実施、②親子向けのオンライン宇宙教育イベントの実施、③学校の先生や保護者向けに宇宙教育オンライン説明会を実施、④宇宙教育の学校への出前授業を行っています。

2. 宇宙教育プログラムの学校教育への導入方法

2.1 民間宇宙飛行士の講演会を実施

自治体の市長や教育委員会を訪れて、地域の小学校や中学校での講演会を企画し提案しています。2023年冬に実施することが決まっています。

私の自治体は、小学校が5校と中学校が2校あります。
生徒数は、合計3000人以上になります。
学校での講演会という方法をとることにより、一度に多くの子ども達に、民間宇宙旅行への夢や希望を持ってもらうことができます。

また、ひとつの自治体での講演会が成功した後は、隣の自治体でも同様に、学校での講演会を実現していきます。これにより、非常に多くに子どもたちに、民間宇宙旅行に対する夢や希望を与えることができます。

図 1 自治体の教育長と

2.2 親子向けオンライン教育プログラム

講演会で喚起された民間宇宙旅行に対する、子ども達の好奇心を継続させるため、オンラインで受講できる民間宇宙教育プログラムを行っています。

また、親子で参加してもらうことで、民間宇宙旅行に対する親の理解を得やすくしています。

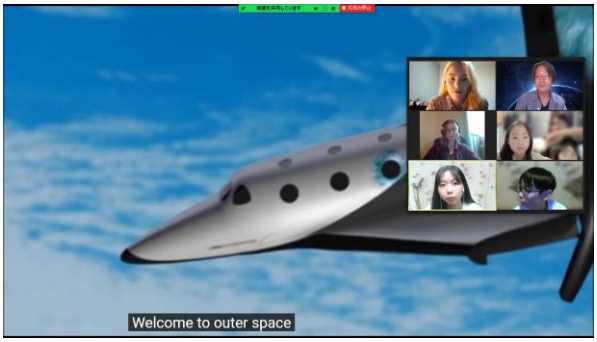

図 2 親子向けオンライン教育プログラムの様子

2.3 教育関係者、保護者を対象に、宇宙教育のオンライン説明会を実施

民間宇宙飛行士による講演会や、オンライン宇宙教育プログラムによって、子ども達が宇宙に興味を持ったとしても、教師や親が宇宙に興味がなければ、子ども達の宇宙への好奇心は、学校や家庭で潰されてしまいます。

そこで、教育関係者や保護者を対象とした説明会を実施することで、宇宙教育に対する理解を得るようにします。

2.4 総合学習の時間に、宇宙教育の出前授業

日本の学校のカリキュラムの中に、「総合的な学習の時間」（総合学習）という授業があります。この授業の中で、宇宙に関わる仕事を紹介します。子供たちが大人になる頃には、今より簡単に宇宙に行ける時代になっています。そこで、子ども達に、「将来、宇宙で、どのような仕事をしたいか」について考えてもらうことで、宇宙に対する興味をもってもらいます。

2-5 キャンピング・トレーラーやドームハウスを改造した民間宇宙船教育訓練シミュレーターの利用

空き地に、キャンピング・トレーラーやドームハウスを改造して制作した ASTRAX 民間宇宙船教育訓練シミュレーターを設置します。
また、これらのシミュレーターは移動可能なため、小学校や中学校でも体験会を実施することができます。

上記セクション 2-1 で述べた民間宇宙飛行士による講演会を実施した学校で、民間宇宙船教育訓練シミュレーター体験学習会を行うことで、民間宇宙旅行をリアルに感じてもらうことができます。

図 4　ASTRAX 民間宇宙船教育訓練シミュレーター

3. 民間宇宙教育プログラムの国際化

2023年3月、私たちは、フィンランドの中学校を訪問して、民間宇宙教育プログラムを実施しました。

プログラム実施後のアンケートによると、プログラムによって、宇宙に対する好奇心が強く喚起されていること、宇宙を身近に感じていることが伺えました。
シンガポール、マレーシアにおいても、教育関係者と宇宙教育の共同実施に向けて動き出しています。

図 3 フィンランドで実施した民間宇宙教育プログラム

4. 課題と解決策

4.1.1 課題①

宇宙教育プログラム実施後のアンケート調査によると、プログラムによって、民間宇宙旅行に対する好奇心が大きく刺激されていることが伺えます。
しかし、プログラムを受けた子供達の、その後の行動を調査すると、日々宿題やテストに追われて、プログラム受講によって喚起された好奇心は、およそ一週間以内に消えてしまっていることが分かります。

4.1.2 解決策①

この課題に対する解決策として、
宇宙教育プログラムや講演会の参加者を対象に、SNS 等を利用したオンライングループを作り、定期的に、民間宇宙旅行に関心を持つ仲間達と交流することで、宇宙に対する好奇心を維持します。

4.2.1 課題②

日本の多くの保護者は、学校の勉強やテストの点数に関係ないことにお金や時間をかけたくないと思っています。そのため、宇宙教育イベントを告知しても、なかなか参加者が集まらないという課題があります。

4.2.2 解決策②

この課題を解決するために、宇宙教育オンラインイベントを国際化します。海外の生徒に参加してもらい、語学力の向上に繋げることにより、保護者の賛同を得やすくします。

4.3.1 課題③

日本の行政機関は、とても保守的なため、プロジェクトの進捗が遅いという課題があります。
民間宇宙飛行士による講演会や、宇宙教育の講師派遣プログラムについて、責任者の承認が得られるまで、数か月から1年かかります。

4.3.2 解決策③

日本の行政機関は、初めてのプロジェクトに対しては保守的で進捗が遅いですが、一度前例を作れば二度目は早いです。また、行政機関と信頼関係を構築できれば、比較的早く話が進みます。そのため、一度目のプロジェクトを確実に成功させることで、行政機関と信頼を築き、次のプロジェクトの早期の実現を目指します。

4-4-1 課題④

公立学校の敷地内に、キャンピング・トレーラーやドームハウスを持ち込むためには、行政の許可が必要になりますが、行政手続きは、非常に長い時間がかかる場合があります。

4-4-2 解決策④

日本の行政機関は、初めてのプロジェクトに対しては保守的で進捗が遅いですが、一度前例を作れば二度目は早いです。また、行政機関と信頼関係を構築できれば、比較的早く話が進みます。そのため、一度目のプロジェクトを確実に成功させることで、行政機関と信頼を築き、次のプロジェクトの早期の実現を目指します。

5. 結論

民間宇宙教育プログラムを実施すると、子ども達だけでなく、親や先生も、強い関心を持ってくれます。理科や数学に対する好奇心を刺激する教育効果も期待できます。

しかし、同プログラムを日本の学校に導入するためには、長期的な視点での準備が必要だということが分かりました。なぜなら、日本の学校では、スケジュールが詰まっており、民間宇宙教育を行う授業時間を確保するためには、1年前から自治体の教育関係者や学校と交渉する必要があるからです。また、同プログラムの教育効果を持続、促進するためには、継続的かつ積極的な宇宙への関りが必要不可欠です。なぜなら、日本の子ども達は学校での勉強が忙しく、宇宙への興味を維持する余裕がないからです。

そのため、子ども達が、気軽に、かつ継続的に宇宙イベントに参加できる仕組みを作り、民間宇宙教育の効果を最大限に高めていきます。

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【34】Introduction of a practical example of ASTRAX Lunar City mapping with Minecraft and its linkage to Economic Activities on Earth
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【36】Proposal to Add a Space Economics Subcommittee to the UN Office for Outer Space Affairs' Committee on the Peaceful Uses of Outer Space(COPUOS in UNOOSA)
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【39】The Effects of Using Minecraft to Teach Children about Space
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【40】Maintaining the Health of Pilots and Crew
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【71】The Role of Space Flight Attendants in Large, Long-duration Space Travel,
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【73】Development of ASTRAX Zero Gravity Aircraft Education and Training Simulator
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【74】Developing technology for drinking chilled carbonated beverages in space
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【75】Development of commercial spacecraft education and training simulator using the Metaverse メタバースを利用した民間宇宙船教育訓練シミュレーターの開発

【76】Construction plan of ASTRAX LUNAR CITY Simulation Facility in Japan 日本における ASTRAX 月面シティシミュレーション施設の構築計画

【77】Development of the space toilet called "Space Benking" 2023
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【79】Analysis of passengers' needs and demands of ASTRAX Zero Gravity Services and application for space travel services
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【81】Technology, problems and solutions for drinking alcohol in space
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【84】Local revitalization project to turn my hometown, Komono Town, into "space town"
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【85】Methods and Practices for Introducing Private Space Education Programs into Japanese Schools
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【86】Development of a "lunar pattern okonomiyaki" baking method to help promote tourism in a lunar city
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【87】Space Education and Nutrition Education Using "Solar Planet Takoyaki
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【88】Application of activities on luxury cruise ships to space tourism vessels
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【89】Astrology in the Space Age: What will happen to the horoscopes of those born on the Moon?
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【91】Building a Lunar Community for Children: Challenges of Cooperation and Simulating Team Building 子どものための月面コミュニティづくり: 協力への挑戦とチームビルディングの模擬体験

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