

# **SOEN 6841 - Software Project Management**

## **Market Analysis Report**

### **Project 20 - Intelligent Tutoring System**

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## **Market Analysis Report**

### **Title:** Market Analysis Report on IntelliTutor

**Objective:** To conduct a thorough market analysis of Intelligent Tutoring Systems and to understand the target audience, potential users, and competitors in the chosen domain.

### **Content:**

#### **TARGET AUDIENCE IDENTIFICATION**

The primary target audience are the students and children from 3 to 18 years of age, for those going from preschool to high school level. These students may belong to different geographic locations and can come from diverse socioeconomic backgrounds. IntelliTutor is designed for all those students having varying learning preferences and grasping power. Students are seeking personalized learning experiences customized to their pace and needs which help them to improve their understanding of the subjects, which in turn will lead to good academic performance. IntelliTutor is developed with keeping all these points in mind, which will, in the end, help students improve their performance and grades in the class.

Considering the stakeholders and the customer base, our target audience can be defined as follows:

##### **1. Students/Children**

They are the main users of the application, who will benefit from it. It is necessary that they find IntelliTutor easy to use, and enjoy learning from it. We will be targeting the product to a wide range of ages, as IntelliTutor aims to be a companion for all children, right from toddlers to teens and be there with them through every step of their learning journey. The following characteristics can be considered while defining which children will be the target audience for IntelliTutor:

##### **Demographic characteristics:**

- a. **Age:** As mentioned above, IntelliTutor's goal is to be a companion for the child in terms of education, hence we must provide for the child right from preschool to high school. Due to this, the target age of the students would be from 3 years to 18 years of age.
- b. **Education Level:** Since IntelliTutor is designed to help students from the age range of 3-18 years, it will be covering the education of preschoolers as well as elementary, middle and high school students.
- c. **Geographic location:** Our aim is to benefit each student from IntelliTutor. So, students worldwide (with regions having access to the internet and the required technology) can take advantage of it.
- d. **Socioeconomic background:** For Direct customers, the target would be middle-class and higher income strata of families. This is because, due to the range of subjects and facilities provided, a lot of money will be invested in expertise and technology, which will affect the final market price of

the product. On the other hand, if integrated by educational institutions, all students, regardless of their backgrounds, can benefit from IntelliTutor.

- e. **Language:** As IntelliTutor plans on having multi-lingual support, students from all regions and languages will be able to use the application.

### **Psychographic characteristics:**

- a. **Attitude towards Learning:** As long as the child is interested in learning, the application is meant for them. The adaptive learning algorithm will automatically adapt to how the child wants to learn.
- b. **Attitude towards Technology:** Students are becoming more familiar and comfortable with the technology. With IntelliTutor, they can learn in a comfortable environment, customized to their preferences which will help them to study efficiently.
- c. **Goals and Aspiration:** The ideal target student for IntelliTutor will have the goal of learning and doing well in their school and with their grades. Not only will they be focused, the algorithm might also be able to understand and inform them on what they are interested in, in turn helping them with choosing their career.
- d. **Motivation:** IntelliTutor is aimed at keeping students motivated by having quizzes and exercises which gets reflected on the leaderboard. This enables a healthy competitive approach among the students, which will motivate them to perform better the next time. The ideal student will be self-directed and looking for a personalized learning experience.
- e. **Personality:** Following the big 5 personality test, the ideal characteristic of a student who will excel with IntelliTutor is someone with higher extraversion and more openness. With the unique study-buddy feature of IntelliTutor, an extroverted student will use this feature well and as this form of learning is not traditional, a child ranking higher in openness will adapt well to this format.

## **2. Parents/Guardians**

Parents will be the secondary users of IntelliTutor. Parents are worried about the performance of their kid and would like to know how their children are currently doing in studies. IntelliTutor allows parents to keep track of their children's performance and help them understand the learning graph giving them the idea of the kids strengths and weaknesses. The following characteristics can be considered while defining which parents will be the audience for IntelliTutor:

### **Demographic characteristics:**

- a. **Geographic location:** Our aim is to benefit each parent from IntelliTutor. So, parents worldwide (with regions having access to the internet and the required technology) can take advantage of it.
- b. **Socioeconomic background:** For Direct customers, the target would be middle-class and higher income strata of families. This is because, due to the range of subjects and facilities provided, a lot of money will be invested in expertise and technology, which will affect the final market price of the product. On the other hand, if integrated by educational institutions, all students, regardless of their backgrounds, can benefit from IntelliTutor.

- c. **Language:** As IntelliTutor plans on having multi-lingual support, parents from all regions and languages will be able to use the application and can benefit from it for knowing the progress of their childrens’.

#### **Psychographic characteristics:**

- a. **Attitude towards Learning:** Parents who want to learn how their childrens’ are performing in terms of academics will use IntelliTutor. They are concerned that their childrens’ are getting the right educational support which fits their way of understanding.
- b. **Attitude towards Technology:** With the use of technology everywhere, parents are also becoming familiar with using different websites and applications, and such guardians and parents are perfect for this product. IntelliTutor being an online platform with user-friendly interface makes it comfortable for the parents to use it.
- c. **Goals and Aspiration:** Parents using IntelliTutor will expect their kid to achieve excellent grades and choose a domain based on their for their higher education. They will want to be informed about how well their child is doing in his studies.
- d. **Personality:** Following the big 5 personality test, the ideal characteristic of a parent who is supportive towards their kid have more openness. The parents themselves would also be more open to different kinds of learning journeys and formats, as ITS is not a traditional system.

### **3. Educational Institutions and Educators**

IntelliTutor aims to target institutions which can team up with this ITS to provide their students a varying and more effective learning experience. By integrating IntelliTutor into their educational system, they can customize this application’s learning paths for their students. The following characteristics can be considered while defining which educational institutions will be the audience for IntelliTutor:

#### **Demographic characteristics:**

- a. **Geographic location:** As IntelliTutor aims to provide custom learning paths for each country and institutions themselves can customize their own paths, educators and institutions from all around the world can use this application.
- b. **Language:** As IntelliTutor plans on having multi-lingual support, institutions and educators from all regions and languages will be able to use the application and customize it for their students.
- c. **Education Level:** Institutions providing education from preschool to K-12 are considered to be ideal targets for integration with IntelliTutor, as that is the demographic of students catered to by the application.

### **Psychographic characteristics:**

- a. **Attitude towards Learning:** School boards who are keen to understand the performance of students enrolled in their institution are ideal for IntelliTutor. This product will show the progress and report of each and every student and also a generalized report which will help the institution to understand students and help them with studies.
- b. **Attitude towards Technology:** With the use of technology everywhere, educational institutions must be familiar with using different websites and applications. IntelliTutor being an online platform with user-friendly interface will also make it comfortable for them to use it.
- c. **Goals and Aspiration:** IntelliTutor will help the educational institutions to understand their overall performance and grading score by providing a report every month on the students' performance.
- d. **Personality:** An educational institution will need to be less rigid and accept an unorthodox way of teaching to use IntelliTutor. Their acceptance to use different learning technologies is necessary for this integration.

### **COMPETITOR ANALYSIS**

After conducting a thorough market analysis and research of multiple companies in the Intelligent Tutoring System industry, we gained insight on how this space has evolved over time. We researched various ITS like *Khan Academy*, *DreamBox*, *Carnegie Learning*, *Duolingo*, *ALEKS* etc. and understood their business values and products. A more detailed competitor analysis of three of the most similar companies was then performed.

#### **1. Khan Academy**

Khan Academy is a non-profit organization which provides learning in various subjects like Mathematics, Economics, Programming, Science, Arts and Humanity. It focuses on the students from preschool to college. It offers personalized training which offers students to learn at their own pace. It offers various instructional videos and practice exercises for better understanding of the topics among the students. Performing a detailed research on this company, we created the following SWOT analysis:

##### **a. Strengths:**

- **Free Access:** Khan Academy is a non-profit organization, meaning that the course contents are available for free of cost to all the students regardless of their socioeconomic backgrounds.
- **Engaging Instructional Videos:** Khan Academy is well-known for its instructional videos which provides clarity of the topic among students. The videos are also engaging, making it simpler for students to understand the complex topics.

**b. Weakness:**

- **Limited Live Support:** While Khan Academy is providing self-paced learning to the students but it lacks the feature of live support or direct teacher interaction which may make the student the need for a personalized assistance.
- **Language Limitations:** Khan Academy provides some of the contents in multiple languages and not all. Thus making it less accessible to the non-speaking students.

**c. Opportunities**

- **Peer Interaction:** Though Khan Academy has discussion forums, it can increase the interaction among students by giving them virtual group projects. Also, they can assign a student buddy to each other so that they can engage themselves in discussions and enhance their knowledge.
- **Enhanced Personalization:** It can further enhance personalized learning by providing unique instructions and support to each student according to learning pace and goals.

**d. Threats:**

- **Submitted to risk of copies:** The content provided by Khan Academy possesses high value, since the content is free and available to all, the chance of copying the content becomes high.
- **The field is progressively more explored:** ITS is becoming popular and hence the number of ITS present in the market are more, which can become a threat for Khan Academy.

**2. ALEKS (Assessment and Learning in Knowledge Spaces)**

ALEKS, by McGrawHill, is an online learning, adaptive platform that tutors students till K-12 on Math, Science, and Statistics. The platform evaluates a student's knowledge and proficiency using artificial intelligence and adaptive questioning, then develops a personalized learning plan based on each student's unique strengths and shortcomings. Performing a detailed research on this company, we created the following SWOT analysis:

**a. Strengths:**

- **Adaptive Learning Technology:** ALEKS uses adaptive learning algorithms to provide personalized learning experience to each student. This means that it will have exercise, quizzes and learning instructions based on each students' needs which will lead to a positive learning outcome.
- **Real-Time Feedback:** Whenever a student has completed a practice exercise or an assessment, they are given feedback based on it in real time. This allows the students to gain insights on their strengths and weaknesses and focus on the area where they are required to improve.

**b. Weakness:**

- **Limited Interactivity:** ALEKS lacks interactive instructional videos or collaborative learning exercises that can engage students in dynamic ways. When compared to more interactive and

visually appealing learning systems, some users could perceive the platform's engagement to be less engaging.

- **Subject Specialization:** It doesn't provide learning for all the subjects which a student from preschool to 12th grade may have in their curriculum. This may make it less accessible for a student who wants to pay and study on an online platform that can cover their whole curriculum.

**c. Opportunities:**

- **Integration with Educational Institutions:** ALEKS can integrate its adaptive learning platform with different school boards or educational institutions. Integrating with school boards can enhance its visibility in the market which will increase its adoption rate among other students.
- **Expansion into Additional Subjects or Levels:** Even though ALEKS uses adaptive learning for personalized learning according to the students needs, it doesn't cover all the subjects which a student would be looking for in an online learning platform. ALEKS can add more subjects in their platform which can increase the total number of users it has now.

**d. Threats:**

- **Competition from Specialized Platforms:** There are various other platforms like DreamBox which also provide specialized help in Math, which is a threat to ALEKS.
- **Technological Advancements:** If ALEKS does not adapt to new features and trends, the rapid improvements in educational technology could become a threat.

**3. DreamBox**

DreamBox is an adaptive math and reading program designed for students from kindergarten to eighth grade. Through the use of adaptive learning technology, this online platform offers students individualized math and reading teaching that is customized to meet their unique needs and learning style. Performing a detailed research on this company, we created the following SWOT analysis:

**a. Strengths**

- **Comprehensive Content Coverage:** DreamBox provides a broad and flexible math and reading programme with extensive material coverage from kindergarten through the eighth grade. With so many areas covered, kids are guaranteed a well-rounded education that is catered to their grade levels and specific requirements.
- **Educator Support Tools:** It provides educators with tools and resources, including dashboards, analytics, and insights, to better analyze student performance and customize instruction.

#### b. Weakness

- **Subject Specialization:** Dreambox only provides study material on Math and reading. Other subjects such as sciences, economics etc. are not covered. Due to this, its applicability to a wider market wanting a broader range of subjects is non-existent.
- **Limited Coverage for Advanced Grades:** As only content till eighth grade is provided, it provides no coverage for topics for high school education, unlike many only Adaptive learning platforms.

#### c. Opportunities

- **Integrate more Subjects apart from Math and Reading:** As mentioned before, there is limited coverage of subjects provided by Dreambox. This is a huge opportunity for the company to diversify their content into other topics.
- **Multilingual Learning:** Currently, Dreambox is only provided in Spanish and English. Due to this, a huge market share that speaks other languages is not covered. Hence, this is an opportunity that can be explored and expanded into.

#### d. Threats

- **Competition from ITS providing more general subjects:** Other ITS, like Khan Academy, provide a much more varied range of topics and curriculum, which is a threat to a specialized platform like Dreambox.
- **Changes in Educational Policies or Curriculum:** DreamBox's material may become less relevant due to changes in curriculum standards or educational legislation, so it must be flexible enough to meet changing educational needs.

### 4. Duolingo

Duolingo is a language-learning platform that offers courses in various languages, catering to learners of all levels, from beginners to advanced. It utilizes gamified techniques to make language learning engaging and effective. Performing a detailed research on this company, we created the following SWOT analysis:

#### a. Strengths

- **Free Access:** Similar to Khan Academy, Duolingo offers its language courses for free, making them accessible to anyone with an internet connection.
- **Gamified Learning:** Duolingo's gamified approach, including points, rewards, and streaks, motivates users to stay engaged with their language learning journey.
- **Bite-sized Lessons:** Duolingo's lessons are designed to be short and digestible, allowing users to learn languages in short bursts, fitting into even the busiest schedules.



## **b. Weakness**

- **Limited Live Support:** Like Khan Academy, Duolingo lacks live support or direct interaction with instructors, which may hinder learners who require personalized assistance.
- **Language Availability:** While Duolingo offers courses in numerous languages, the depth and availability of courses may vary, limiting options for learners interested in less commonly taught languages.

## **c. Opportunities**

- **Community Interaction:** Duolingo can expand its community features to encourage peer interaction among learners, fostering language practice through discussion forums or virtual group activities.
- **Enhanced Personalization:** By further tailoring lessons to individual learning styles and goals, Duolingo can better meet the diverse needs of its user base and improve learning outcomes.

## **d. Threats**

- **Content Replication:** Duolingo faces the risk of its course content being copied or replicated, potentially diluting its unique value proposition.
- **Increasing Competition:** The language learning technology market is becoming more saturated with the emergence of various language learning apps and platforms, posing a threat to Duolingo's market share and relevance.

## **BUSINESS VALUES**

As seen from the Competitor Analysis done above, we can see that there are many competent Intelligent Tutoring systems found in the market, with many different features, catering to various age groups and demographics. However, there are still some gaps in the market that have not been covered by a single ITS. We have identified these gaps in the market that will be filled by IntelliTutor.

### **Unique Selling Points**

#### **1. Student Interaction (Study Buddy Feature)**

Our solution to overcome the social anxiety that could build up due to online learning among students makes it unique from the other ITS present in the market. IntelliTutor will group students according to their learning graph. This will include communication among the students. IntelliTutor will organize virtual group projects in which students can collaborate to solve problems. This feature will help them feel less isolated. Grouping students together will improve their learning outcomes. Virtual group projects will teach them how to work in a group and develop teamwork skills that will be useful in their future careers.

## **2. Multilingual Support**

IntelliTutor overcomes the frailty of other ITS by providing educational contents, that is, videos, practice exercises and assessments, notes etc. in multiple languages. This feature will help the students from all over the world to take advantage of IntelliTutor to learn and achieve their goals. Furthermore, IntelliTutor breaks down linguistic barriers for a truly global learning community by working with language specialists and local speakers to produce correct translations. This assures linguistic inclusion. Regardless of a student's original language, IntelliTutor's commitment to providing diverse language support is a reflection of the product's commitment to ensuring that education is enriching and accessible for all.

## **3. Multidisciplinary and Wide Age Range**

As studied in competitor analysis, many ITS don't provide learning for all the subjects which students learn in their schools. Also, they don't cover all the age groups of students. Our learning platform tackles all these missing components making it a good fit for all the students. IntelliTutor will be a good fit for all the students as it provides learning in one platform making it financially easier for students as they have to invest in only one learning platform instead of multiple. Also, having all the subjects in one place makes the system showcase how the knowledge gained in one subject can be applied to another, fostering interdisciplinary connections among them and providing better understanding of the concepts.

### **Value Proposition**

Considering the market analysis and our USP, following is the Value Proposition of IntelliTutor for its customer base:

“IntelliTutor is an Innovative Tutoring System (ITS), which offers a comprehensive educational experience for students aged 3 to 18, acting as a companion throughout the student's learning journey. It utilizes a multidisciplinary approach to cover many areas, showcasing knowledge transfer from one subject to the other. A novel study-buddy function on our platform encourages student participation and lessens social isolation. With its support for numerous languages, IntelliTutor guarantees inclusivity. IntelliTutor is made for individualized, interesting, and globally accessible education.

Apart from its innovative features, IntelliTutor places an emphasis on user experience by means of an easy-to-use User Interface (UI), guaranteeing that parents, teachers, and students can all easily navigate the platform. IntelliTutor's adaptive learning algorithms optimize course difficulty for improved comprehension by customizing the educational experience to each student's needs. The incorporation of gamification aspects enhances student engagement by rewarding and recognizing their accomplishments, hence creating a positive and stimulating learning environment. Together, these components support IntelliTutor's dedication to offering not only instructional materials but also a comprehensive and pleasurable learning environment.”