



# Human-centered Design Thinking for New Product Idea Validation

Case for a Nepali Language Learning Tool for Nepali  
Kids Living Outside Nepal

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**ABSTRACT**

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Many great products have failed not because they were flawed or inferior, but because the end users did not buy or could not accept those. This raises an important question: How can companies know what the end users will buy? In today's business world, involving users early in the product development process is gaining recognition for its collaborative approach and benefits. By integrating end users into the early phases of product development, companies can tap into a wealth of insights and perspectives that might otherwise remain hidden. This collaborative approach fosters a deeper understanding of the users' needs, preferences, and pain points. Moreover, it facilitates the identification of potential pitfalls and challenges that could deter user adoption.

In an ever-changing world where technological progress constantly reshapes the market, the practice of embracing end users early on in product development is not just a calculated choice but is vitally important for the bold measure to reduce the risk of product failure. As companies continue to embrace this collaborative ethos, they position themselves to create products that not only meet but exceed customer expectations, fostering a mutually beneficial relationship between producers and consumers.

Nepali children living abroad face challenges in learning their native language due to limited resources. According to the research done on mother tongue education, Preserving one's cultural heritage is essential through mother tongue education, but for the sake of economic advancement, it is more beneficial to start

learning Nepali or English at a young age (Burnett & McNulty, n.d.). This thesis report will be used to develop a user-friendly Nepali language learning tool for these children. Human-centered design thinking was applied to validate the need for the tool and involve relevant stakeholders.

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Key words: human-centered design, new product development, language tool

## CONTENTS

1	INTRODUCTION .....	7
1.1	Background .....	7
1.2	Research Purpose .....	8
2	Literature Review .....	10
2.1	New product development .....	10
2.2	Challenges in New Product Development .....	12
2.2.1	Managing risks and uncertainties .....	13
2.2.2	Cross Functional Collaboration .....	13
2.2.3	Time and resources constrain .....	14
2.2.4	Market dynamics and competitive landscape.....	15
2.3	Human-centered Design .....	16
2.4	Human-centered Design Thinking for New Product Idea Validation.....	18
2.5	Language learning and development.....	19
2.6	Child Development.....	20
2.7	Nepali Kids outside Nepal:.....	20
2.8	Parental involvement in language education .....	21
2.9	Technology-based language learning tools and their impact on children's language .....	25
2.10	Culture and Linguistic Preservation .....	25
2.11	Language learning model .....	26
2.11.1	Software based language learning .....	26
2.11.2	Live language learning (ONE-ON-ONE) .....	27
2.11.3	Structured live language learning .....	28
2.11.4	AI based language learning apps.....	28
3	METHODOLOGY .....	29
3.1	Research Design .....	29
3.2	Research Scope .....	31
3.3	Research Methodology .....	32
3.4	Data Collection.....	34
3.4.1	Desktop Research.....	34
3.4.2	Online Survey.....	35
3.4.3	Semi-structured Interview.....	36
4	ANALYSIS.....	37
4.1	Desktop Research .....	37
4.2	Survey Outcome .....	38
4.3	Interview Outcome .....	47

5	DISCUSSION .....	51
5.1	Analysis of existing solutions .....	53
6	CONCLUSION .....	56
6.1	LIMITATIONS .....	58
	REFERENCES .....	60
7	APPENDICES .....	63

**GLOSSARY or ABBREVIATIONS AND TERMS (choose one or other)**

HCD	Human-centered Design
IT	Information Technology
NPD	New Product Development
R&D	Research and Development
TAMK	Tampere University of Applied Sciences
UAE	United Arab Emirates UKUnited Kingdom
USA	United States of America
cr	credit
IOM	International Organization for Migration
GNC	Gurkha-Nepalese Community
NSW	New South Wales
NAQ	Nepalese Association of Queensland

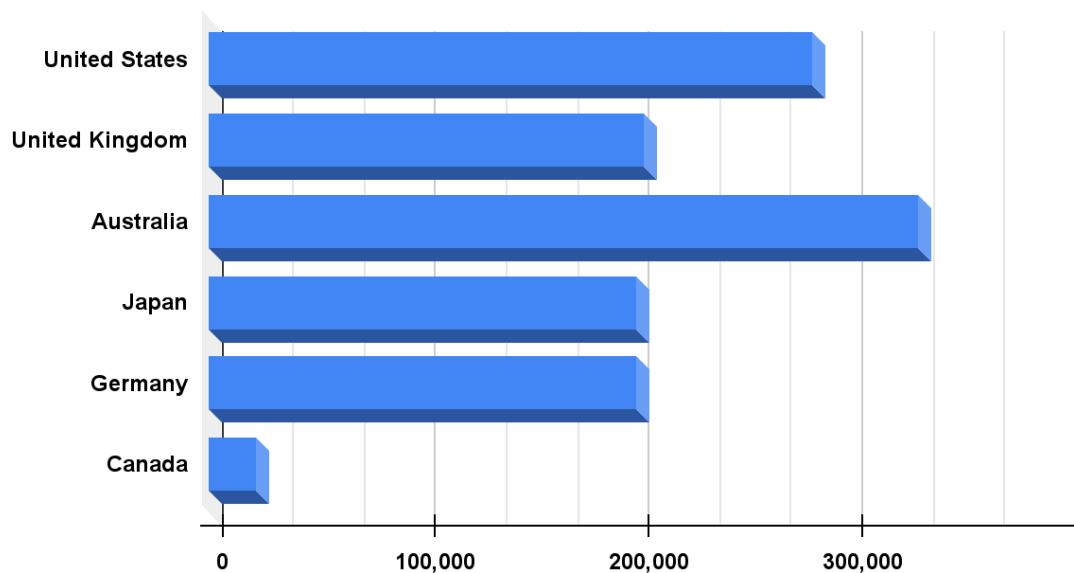
## 1 INTRODUCTION

### 1.1 Background

KTM Labs, a dynamic IT company with a strong track record in innovative MVP products and early-stage prototyping, has set its sights on a new horizon. As an organization deeply rooted in Nepal's burgeoning tech landscape, KTM Labs is now poised to harness its expertise to explore innovative avenues for social impact.

In response to the expanding Nepali diaspora, characterized by a growing number of Nepali children residing in foreign countries, KTM Labs has discerned a significant opportunity to positively impact their lives. These young individuals face challenges when it comes to learning and preserving their native language. With approximately 1.24 million Nepali nationals living abroad, particularly in developed countries like the United States, the United Kingdom, Canada, Germany, and Australia, there is a clear imperative for the development of a user-friendly Nepali language learning tool tailored to cater to their unique needs and circumstances.

#### Nepali Diaspora Population in Selected Countries



*Figure 1. Nepali Diaspora Population in selected country*

Source: Own illustration

## **1.2 Research Purpose**

The primary purpose of this research is to comprehensively identify and address the challenges faced by Nepali children when learning the Nepali language while residing in foreign countries or among the Nepali diaspora. It seeks to develop a product that caters to the unique needs and perspectives of these young learners. In pursuit of this goal, a human-centered design thinking approach is being employed. This approach places a strong emphasis on gathering insights and feedback directly from the end users. By doing so, the aim is to collaboratively work with the end users, considering their valuable opinions and suggestions, in order to guide and recommend the partnering company in the creation of a user-friendly tool that not only meets but exceeds the expectations of the customers.

### **Research question and objective**

- How to verify the need for learning Nepali language for Nepali kids growing up abroad?
- What perspectives do Nepali parents living abroad have on the importance of their children learning the Nepali language?
- How do language educators and experts perceive the significance of a Nepali language learning tool for Nepali children residing overseas?
- What are the existing alternatives? What are their strengths and drawbacks?
- How can technology be utilized to enhance the engagement and effectiveness of the language learning tool for Nepali kids abroad?

### **The objectives and purpose of the project**

- To understand the specific needs and challenges faced by Nepali kids living abroad in learning the Nepali language.
- To validate the demand for Nepali language learning
- To understand the challenges in currently available methods
- To identify and recommend potential solution(s) using a human-centered design thinking approach
- To involve relevant stakeholders, such as Nepali parents living aboard, language educators, and experts, in the validation and development process.



- To provide practical recommendations for the implementation and future development of the Nepali language learning tool.
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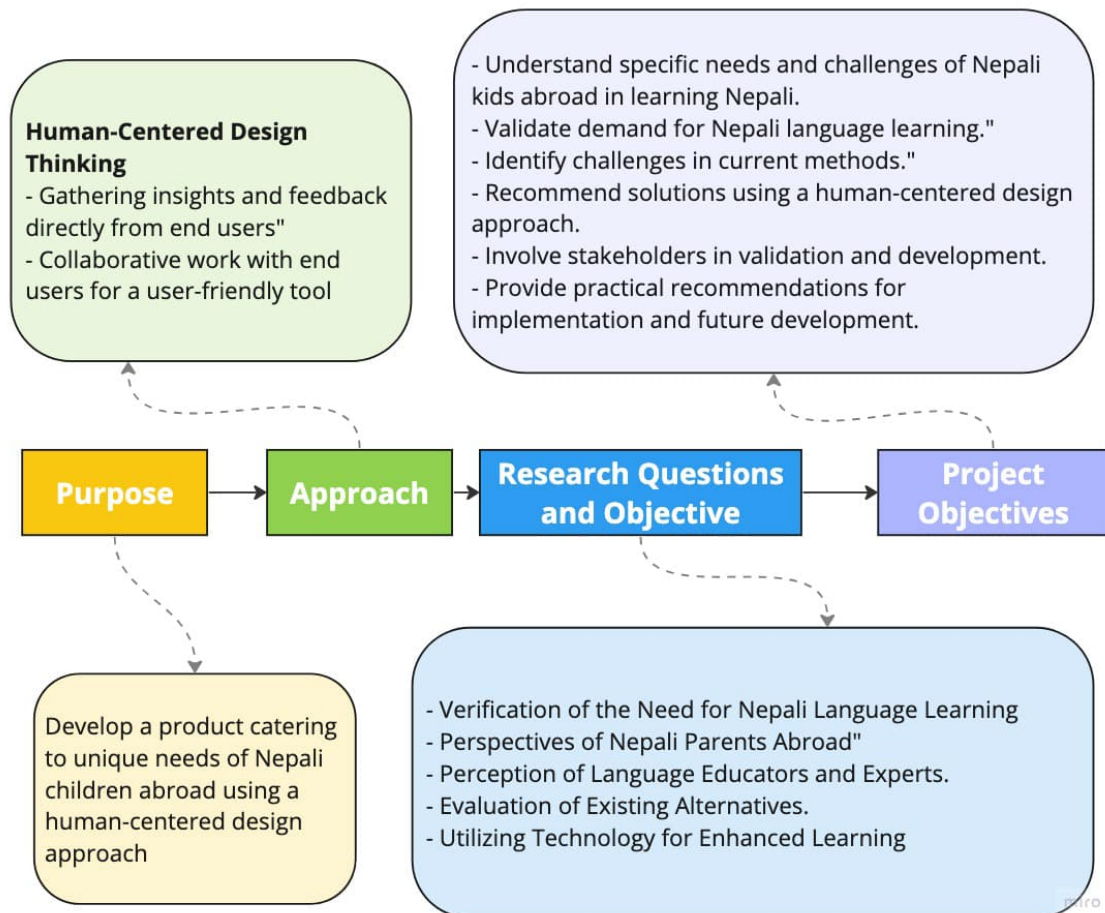


Figure 2. Research Purpose Miro illustration

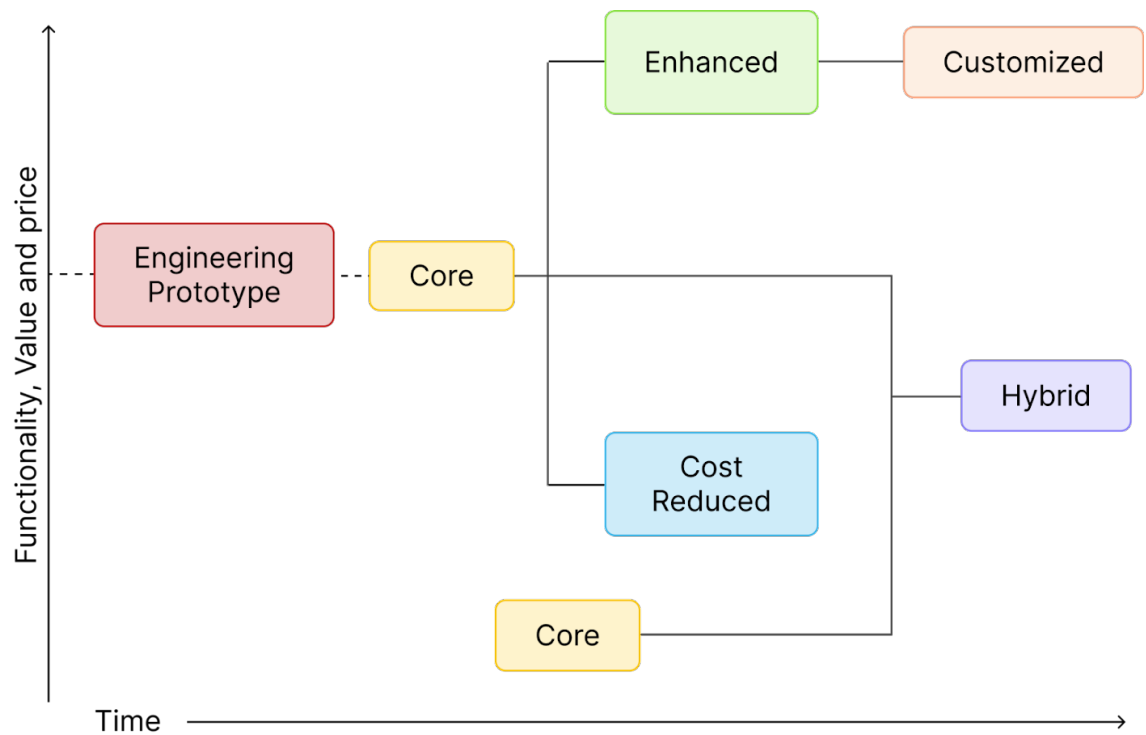
Source: Own Illustration

## **2 LITERATURE REVIEW**

### **2.1 New product development**

New products and their successful development can determine the long-term survivability of a company (Owens, 2007). Cooper & Kleinschmidt (2003) believe that managing new product development process separates the winning firms from the losing ones. There are various approaches of new product development. In the sequential approach to product development, the project passes on through different groups of functional specialists like marketing specialists, R&D engineers, and production engineers during different phases like concept development, feasibility testing, product design, development process, pilot production, and final production. On the other hand, in the holistic approach of product development, a multidisciplinary team of specialists work from start to finish as a team and pass the project back and forth engaging in an iterative process (Takeuchi & Nonaka, 1986).

According to harvard business review developing and manufacturing new products in business is significantly important. likewise, New products whether in established industries like automobiles or dynamic ones like computers, are seen as a means to gain a competitive edge. It can set industry standards or create new markets. Additionally, they can also benefit organizations by leveraging untapped R&D innovations, revitalizing engineering teams, providing opportunities for reorganization, and maximizing existing investments. (Wheelwright & W. Earl Sasser, 1989)



- **Engineering prototype**, leads to pilot production and ramp up
- **Core** redefined from initial prototype, becomes the standard offering.
- **Enhanced** adds distinctive feature to the core for identified market segments
- **Customized** distinctive feature in small lots built for specific distribution channels or customers.
- **Cost Reduced** stripped down and/or low manufacturing cost version of core product for low end.
- **Hybrid**, A new design developed by merging characteristics of two core products

Figure 3. Generic Product development map (Wheelwright & W. Earl Sasser, 1989)

The visual representation of the Generic product map demonstrates how products in one generation are connected, forming the foundation for tracking product families evolve across different generations.

Generic product development is a process of developing and launching new products that involves identifying customer needs, designing and developing products which will meet those needs, and also marketing and selling those products. The author also discusses about different types of leveraged products: **Enhanced products** are products that have been improved from the core design.

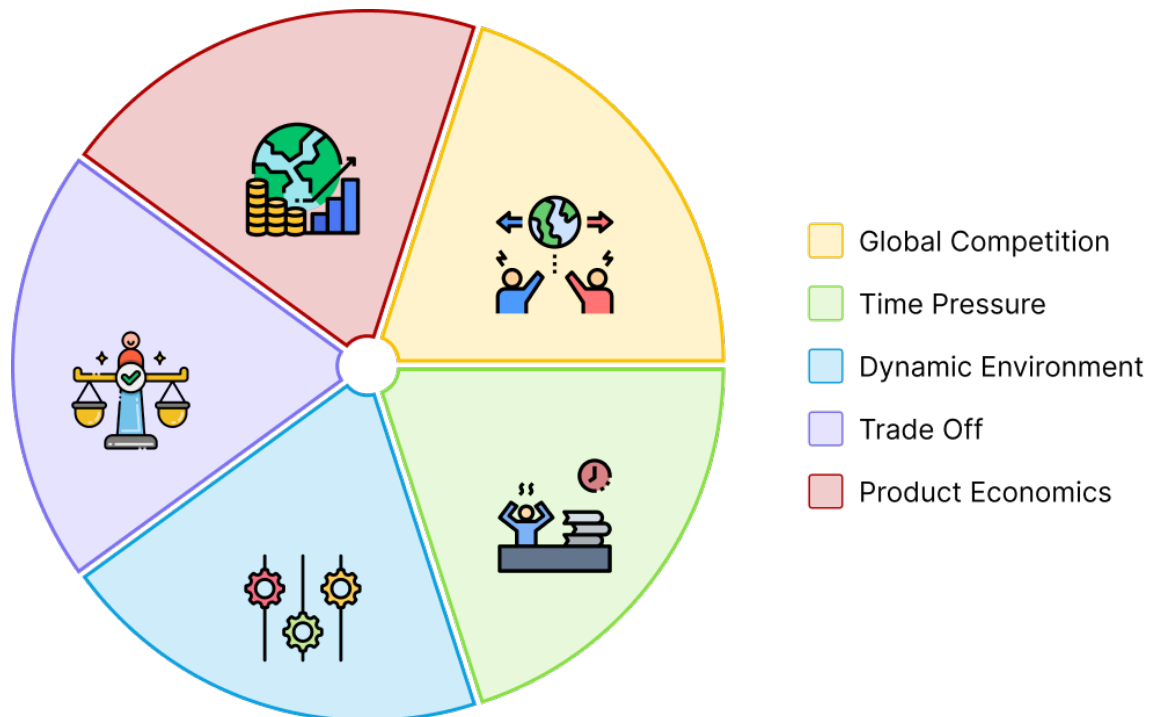
**Customized products** are products that have been modified to meet the specific needs of a particular customer or market.

**Cost-reduced products** are products that have been designed and manufactured to be less expensive than the core product. and lastly

**Hybrid products** are products that have been developed by combining two or more core products. (Wheelwright & W. Earl Sasser, 1989)

## 2.2 Challenges in New Product Development

New product development is a journey and it is fraught with challenges. Conquering these challenges is vital for achieving successful product development and guaranteeing that the end result aligns with customer requirements and accomplishes business goals.



*Figure 4. New Product Development: Challenges*

Source : Own illustration

In the above illustration, Product development challenges wheel shows five key demand for product development which are global competition, time and pressure, dynamic environment, trade off and product economy.

In addition to these challenges, certain other factors are involves such as:

### 2.2.1 Managing risks and uncertainties

**Technical Risks:** Creating groundbreaking products frequently comes with technological uncertainties. This encompasses issues regarding the feasibility, scalability, compatibility, and dependability of new technologies. To reduce these risks, it's essential to conduct comprehensive research, build prototypes, and carry out testing. (*New Product Development Process, 2023*)

**Market Risks:** Market uncertainties and changes in what customers like, need and demand can be quite challenging. To reduce the risks associated with these uncertainties, it's crucial to carry out thorough market research, grasp what customers require, and ensure that your product aligns with the market. (*New Product Development Process, 2023*)

**Financial Risks:** Effectively handling financial risks linked to product development is of utmost importance. These risks encompass budget constraints, exceeding the allocated costs, and achieving a satisfactory return on investment. These challenges can be mitigated through prudent financial strategizing, continuous monitoring, and rigorous risk evaluation. (*New Product Development Process, 2023*)

### 2.2.2 Cross Functional Collaboration

**Siloed Approach:** Developing new product requires involvement and collaboration with various department teams. Silo mentality is a state where someone lacks the enthusiasm to share knowledge or information between departments or team within the company. These kinds of approaches can hinder the productivity of a team and can lead to miscommunication and hinder the need to collaboration. A simple way to overcome this issue would be to encourage open communication, establish collaborative culture and bring in cross functional teams. (*New Product Development Process, 2023*)

**Alignment of objectives:** Multiple departments and teams come to collaborate with each other with their own goals, priorities, and perspectives. Teams include research and development, marketing, design, engineering, manufacturing, and quality control, and many more. All of these team members are vitally important to develop any product or service but they might not always have the same

objective and their goals might not align perfectly. This lack of alignment can lead to several challenges such as miscommunication, conflict and inefficiency within the crew. To overcome these obstacles shared goals can be identified in a team, cross functional teams can be formed from different departments, Leadership support can be given to provide necessary resources and support, performance metrics can be established to reflect in shared objectives. (*New Product Development Process, 2023*)

**Integration of experts:** Product development is a multidimensional process that demands diverse expertise from various functional areas. These areas can include marketing, engineering, design, operations, and many others. To address the challenges faced in cross-functional collaboration, integrating the expertise of these individuals is paramount. Integrating of experts in product development through diverse skill set, knowledge sharing, training, and multidisciplinary approach is essential to overcome challenges and facilitate effective cross-functional collaboration. By tapping into the diverse expertise within an organization, teams can work harmoniously to achieve product development goals and ensure the success of their projects. (*New Product Development Process, 2023*)

### **2.2.3 Time and resources constrain**

**Time to market pressure:** In today's rapidly evolving and highly competitive business environment, the speed at which a product is developed and launched plays a crucial role in a company's success. The pressure to swiftly bring new products to market is a reality that businesses must contend with. However, achieving this goal while maintaining the rigor and quality of the product development process can be a complex task. That is why businesses should focus on optimizing project management, refining their workflows, and ensuring that resources are allocated judiciously to meet the demand for speed while maintaining the standards of thorough product development processes. This approach is essential for remaining competitive and responsive in today's fast-paced business landscape. (*New Product Development Process, 2023*)

#### **2.2.4 Market dynamics and competitive landscape**

According to the author Shrivastav market dynamics is defined as the factors in the market that cause changes in the demand and supply for a product, impacting its popularity and availability. These factors can also offer insights into larger economic trends. Market dynamics are the main drivers behind changes in product demand and supply. These dynamics can be influenced by factors from the government, corporations, or individuals. The government, in particular, plays a significant role in stimulating demand on a national level through measures like tax reductions and business-friendly policies. (Shrivastav, 2020)

The competitive landscape is the range of options a customer has, including your competitors' products and other solutions where customers can also decide to buy a product. (*Competitive Landscape*, n.d.) In a competitive market, it's crucial for a company to distinguish itself from its rivals and continually come up with new ideas. To overcome challenges in product development within a competitive landscape, a company must take a proactive approach, have strong leadership, continuously improve, anticipate risks, encourage teamwork, efficiently allocate resources, and be adaptable to changes in the market. Product development can be tricky, but by understanding and managing the competitive landscape, companies can create unique and successful products. (*New Product Development Process*, 2023)

The major eight steps, as shown below in Figure 5, in new product development are: idea generation, idea screening, concept development and testing, marketing strategy development, business analysis, product development, test marketing, and commercialization. Idea generation simply means looking for new product ideas either internally from within the organization or with some external help. After the long list of ideas generated during idea generation stage, those ideas are evaluated and only good ideas with better looking profit prospects are kept during the idea screening stage. In the third stage – concept development and testing, the product idea is given a verbal or visual form to explain the concept which is then tested with group of target customers to validate the appeal of the idea. (Armstrong et al., 2014)

# 7 Steps for New Product Development



FIGURE 5. Steps in new product development. (Kotler & Armstrong, G. 2010)

The fourth stage in new product development is marketing strategy development where the initial marketing strategy including target market description, product positioning, sales and profit targets are designed. In the business analysis stage, projections related to sales, cost, profits are made considering factors like technical feasibility, and market potential. In the sixth step, the product development takes place through multiple prototypes to ensure the product idea can be translated into a tangible product. Test marketing allows the product prototype to be tested with a concrete marketing plan in real target market settings. Finally, commercialising a product involves distribution of products through preferred marketing and distribution channels. (Kotler & Armstrong, G. 2010)

## 2.3 Human-centered Design

It is a common practice for firms to have a single new-product development process for all projects even though different business contexts require different new-product development processes (MacCormack et al 2012).



In the early stages of the new product development, the views and voice of the customers are critical however often overlooked or underutilised (Van Kleef, Van Trijp, & Luning, 2005). Ogawa, & Piller (2006) argue that companies need to integrate customers into the innovation process to avoid product failures. Human-centered design thinking undertakes collaborative and iterative design approaches to deliver emphatic and human-centered innovation processes (Kazuhiko, 2014).

Human-centered design has four principles as shown in Figure 6. First the people-centered principle requires paying attention to the people and their context to develop things that are appropriate for them. The second principle demands solving the right problem by understanding and addressing the root causes and the underlying fundamental issues. The third principle requires to consider everything as a system of interconnected parts rather than standalone parts. Lastly, the fourth principle encourages us to try small and simple interventions and learn from those using an iterative approach. Instead of rushing into a solution, the principle recommends to continuously develop prototypes, test and refine the smaller solutions to help them meet the needs of the people and their context. (Interaction Design, 2023)

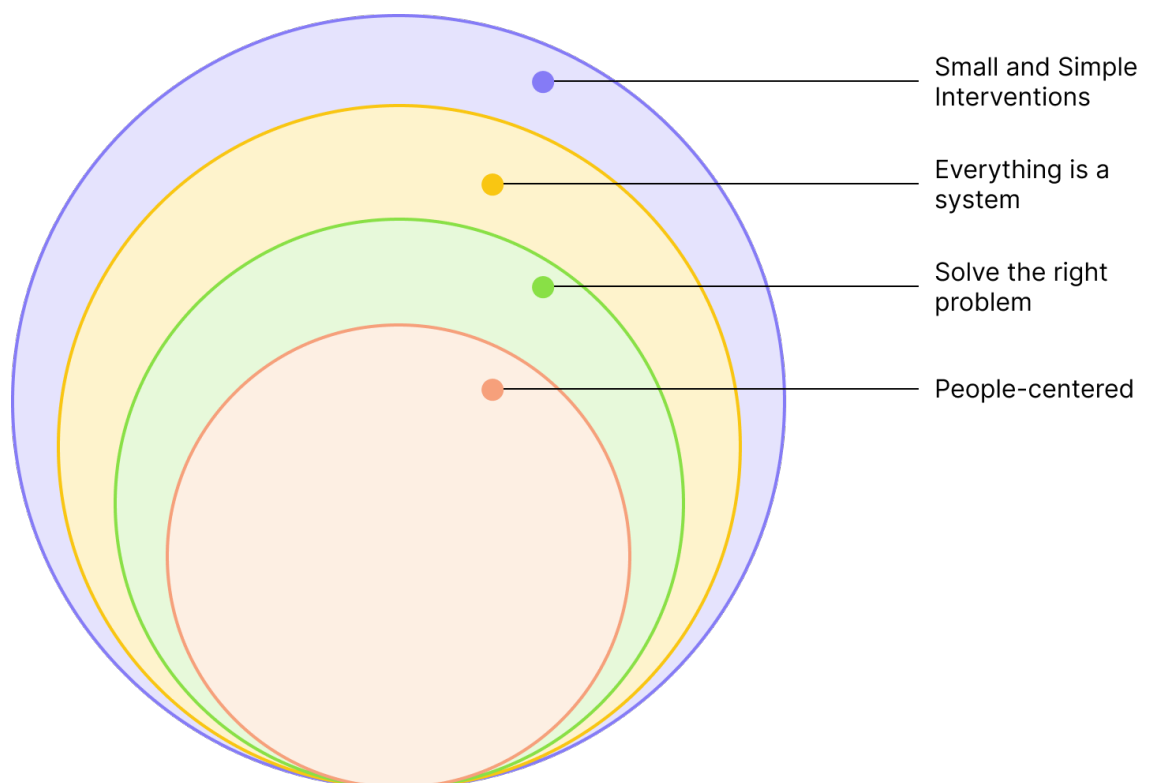


FIGURE 6. Four principles of human-centered design. (*What Is Human-Centered Design?*, n.d.)

## **2.4 Human-centered Design Thinking for New Product Idea Validation**

Human-centered design is a problem-solving technique of creating products and services where the needs, wants, pain-points, preferences of the users are at the core in each phase of the development process. As in Table 1, there are four such phases in human-centered design: clarify, ideate, develop, and implement. The first phase- clarify requires collecting data and observing the customers with the objective to clarify the problem and potential ways to solve it. During the second phase- ideate utilizes various design thinking tools to generate list of ideas by interpreting or approaching a situation from multiple standpoints. In the third phase-develop, the generated ideas are critiqued based on their desirability, feasibility, and viability to build cost and time-effective prototypes. Finally, in the last phase-implement, it is essential to communicate the value to different stakeholders to improve marketability, encourage adoption and drive growth while continuously adapting to the customer needs and wants as they evolve. (Harvard Business School, 2020)

TABLE 1. Stages of human-centered design thinking. (Harvard Business School, 2020)

Phase	Clarify	Ideate	Develop	Implement
<b>Action</b>	Collect data and observe customers'	Generate and test ideas	Prototype to meet user needs	Communicate value and encourage end-user adoption
<b>Example to develop a kid's toothbrush</b>	<ul style="list-style-type: none"> <li>▪ Watch children brush their teeth</li> <li>▪ Kids had difficulties holding thin toothbrushes</li> <li>▪ Unlike adults, kids lacked the dexterity or motor skills</li> </ul>	Design a toothbrush kids could hold easily	Toothbrushes with a big, fat, squishy grip for kids	Every toothbrush company world making similar brushes

## 2.5 Language learning and development

Over the past decade, language learning has become easier than ever before due to increasing influence of technological advancement. For the purpose of learning number of user-friendly applications and software have been developed which allow learners to select the exercise they wish to focus more on and review (Singhal, n.d.). The process of language development is a remarkable journey that ultimately results in the capacity to both communicate and comprehend speech. It is intriguing that children, regardless of their parents' spoken language, acquire language using a consistent approach. Basically, there are three stages of language learning that occur in a similar pattern. The first language development stage is learning sounds, from an early age children have a phonemic awareness in which they can grab 150 sounds in about 6500 languages. The second stage of learning is learning words, During this phase, children grasp how sounds in a language form meaning. For instance, they associate the sound "m-ah-m-ee" with their mother, who provides care and affection. This is a crucial step because spoken language essentially comprises

a sequence of sounds, and to comprehend them, a child must distinguish word boundaries (Bainbridge, n.d.)

## 2.6 Child Development

**Cognitive development in child:** In the initial five years of life, kids experience swift growth and advancement in four key developmental domains: motor (physical), language and communication, cognitive, and social/emotional. Cognitive development pertains to how children process information, investigate, and solve problems. It encompasses the growth of their knowledge, skills, problem-solving abilities, and mental attitudes, all of which aid in their comprehension of the surrounding world and brain development which is an integral aspect of cognitive growth. To nurture our child's cognitive development, it is essential to foster active engagement through quality interactions on a daily basis. This can be achieved through activities such as:

- Engaging in conversations with the baby, and identifying commonly used objects.
- Letting the baby to explore various toys and encouraging movement.
- Singing and reading stories to the baby.
- Introducing toddlers to books and puzzles.
- Expanding upon child's interests by involving them in specific learning activities. For instance, if the toddler displays an early fascination with dinosaurs, consider a visit to the natural history museum to explore this prehistoric era.
- Responding to the child's inquiries and satisfying their curiosity by addressing their "why" questions. (*Help Me Grow MN*, n.d.)

## 2.7 Nepali Kids outside Nepal:

One of the interesting aspects of Nepali kids living outside Nepal is their ability to adapt to diverse environments while retaining a strong sense of identity. These young individuals with a global perspective grow up encountering the blending of cultures, languages, and traditions. For Nepali parents who are raising children in foreign countries, there is often a delicate balance to strike between preserving their cultural heritage and embracing the culture of their adopted country. The majority of individuals, particularly students, migrate from Nepal with the primary aim of pursuing higher education in developed countries. (Adhikari et al., 2023)

Analyzing the migration patterns from Nepal in the last ten years, it's clear that more than two million Nepalese people have moved abroad. They do this for different reasons like education, jobs, and seeking better social security, among other factors. According to the International Organization for Migration (IOM) NPHC 2011 data indicates that there are 11.23 immigrants for every 1,000 people. A survey focused on Nepali children, aged 6 to 18, residing in Japan, unveiled issues related to linguistic and cultural differences. These challenges were observed to hinder effective communication, consequently impacting their ability to form meaningful interpersonal connections. In interviews with parents, it became evident that despite the expectation of their children acquiring the new language faster than themselves, language barriers presented obstacles to the parents' capacity to provide support and assistance in their children's education at home. (Banstola & Inoue, 2023)

## **2.8 Parental involvement in language education**

Parents are the first teacher of a child. Children are born with an astonishing ability to mimic the behavior of those around them. From their first moments of life, they start observing their parents' actions, facial expressions, and tones of voice. They learn to connect words with objects like toys and book stories with actions and emotions by listening to their parents. This natural impulse to imitate is the foundation of early learning and basic motor skills. Children also gain insights into emotions and social interactions from their parents, shaping their emotional intelligence and interpersonal skills. Parents serve as primary agents for passing on values, ethics, and morals through daily interactions, laying the foundation for a child's moral compass.

On analysing limited papers published on parental involvement in language learning, one of the findings suggests that parents who read books and engage in storytelling to their kids in an appealing manner help not only to support the relationship between child and parents but also encourage a love for reading which seems to be the most important factor. (Duursma, E., Augustyn, M., Zuckerman, B., n.d.) The active participation of parents, particularly their engagement at home and communication with schools, significantly influences the language development of preschool children. (Feng & Tan, 2022) A research

paper published on research gates about parental involvement in foreign language learning was done with the reference to Hongkong kids between the ages 5-8 years in the English language and concluded that Cultural mismatch could be one of the reasons for parents to choose how they are supporting their kids on a language learning journey. Now all cultures may focus the same of teaching their kids and especially, reading aloud might never have been considered in learning a particular language. For example, one of the candidates on the paper gave their opinion on learning Cantonese that focusing on characters is more important than focusing on vocabulary and storytelling. The second point made by the paper was that parents themselves might not be self-sufficient to teach the language they desire, for example, If they are second-generation parents who moved abroad and they are not fully familiar with their native language then it would be tricky to teach the child their native language. (Forey et al., 2015)

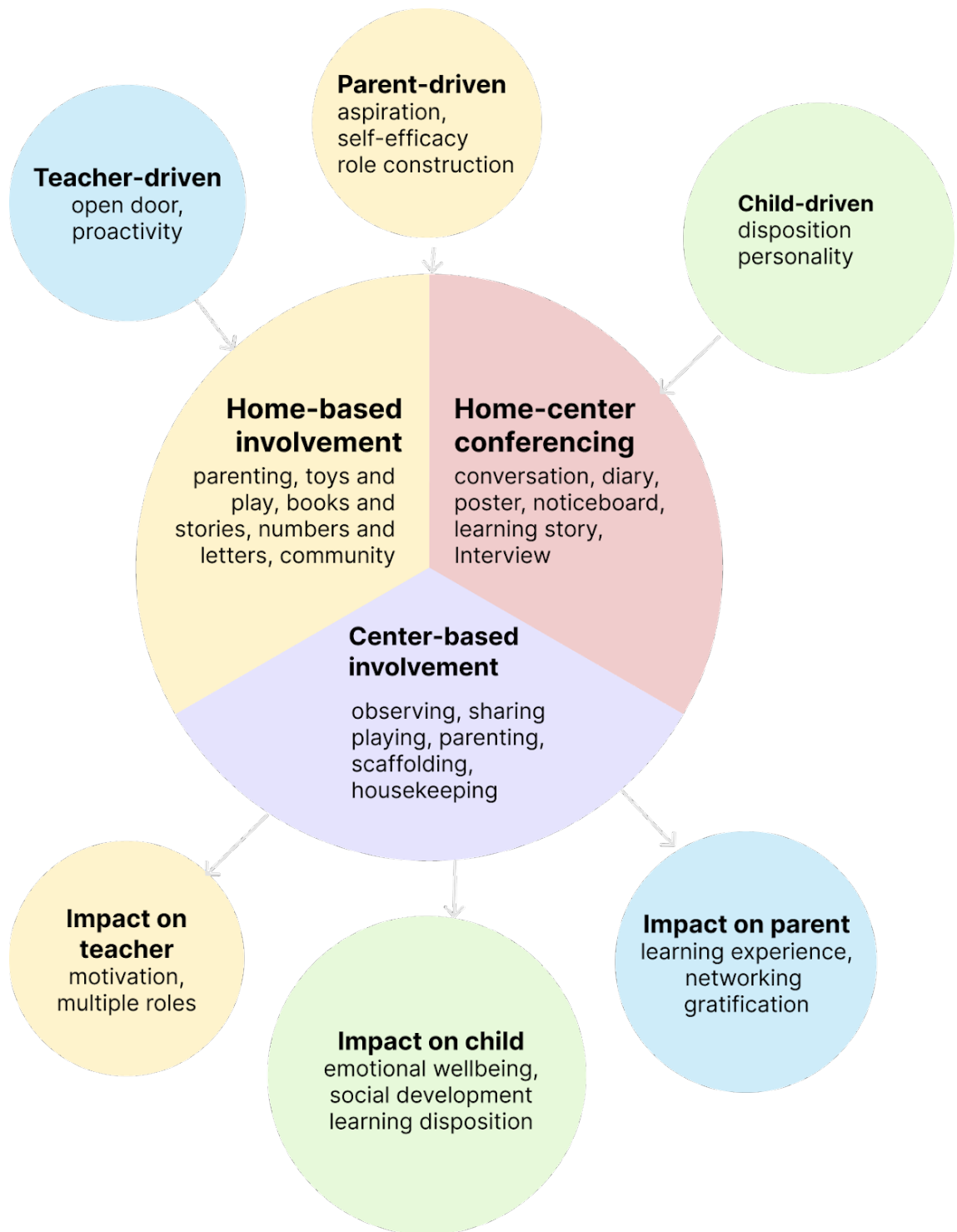
There is also a study done on the meaningfulness of parental involvement in learning and development of child which suggests that not some researchers view specific forms of parental involvement as 'ineffective' and 'insignificant.' (Zhang, 2015)

The figure 5 below demonstrated by the author Zhang shows a prominent ecosystem of interconnection between teacher driven, parents driven and child driven learning with respect to the impact on the child, parents and teacher. This trinity guides the guardians to make a significant impact on learning language for a children that considers different approaches like homebased involvement which includes involving a child on activities like playing with toys that have theme play but at the same time learn new terms, incorporating story telling before bed time, learning alphabets and letters.

Home centered conferencing involves conversation with the kids, encouraging them to write a diary. Similarly, center based involvement according to the author is considered as involving kids in activities like fruit cutting as putting cover in the books, it was noteworthy that many parents provides a significantly positive feedback regarding the involvement of kids in such kinds of activities. They

described by pointing out that it makes them responsible for their own things.  
(Zhang, 2015)

The final section incorporates the experience of learning and their impact on child, parents and teachers. These types of involvement fosters emotional awareness and social well-being, children will be better prepared to overcome challenges, set and achieve goals, and ultimately, reach their full potential. The active involvement of parents and teachers serves as a catalyst for children to become emotionally aware. When children feel supported and valued, they are more likely to develop a strong sense of self, emotional intelligence, and resilience.



*Figure 7: Meaningfulness of parental Involvement*  
Source: Based on (Zhang, 2015)

Above Figure illustrates a comprehensive model that integrates all themes, categories, sub-categories, and the interconnections among them. Within this model, the triad of teacher, parent, and child establishes the framework for all relationships.



## **2.9 Technology-based language learning tools and their impact on children's language**

Technology-based language learning tools have had a profound influence on children's language development in recent years. These tools offer ingenious and winsome ways for young learners to acquire and improve their language skills. Not long ago, technology has transformed the outlook of language learning for children. There are tons of interactive applications and online platforms with all the digital resources available for children to make a language learning journey more fun and constructive. Children are more likely to engage in language learning activities when the process of learning feels more like play rather than tediously memorizing things. There are many repercussions of technology-based language learning tools on child language development, some of the impacts are: Technology-based games and activities inspire children to develop their critical thinking and problem-solving skills which is a major factor for cognitive development.

They enable children to learn independently with technology and foster a sense of responsibility and reliability among them.

The advancing technology and innovation are enabling children to become increasingly acquainted with digital skills and stay abreast of modern technologies. In a swiftly evolving world where new inventions and tools emerge daily, exposure to technology will assist children in adapting to the dynamic changes in their environment.

Moreover, the significance of digital technology and digital literacy in education has been underscored by the COVID-19 pandemic. One research paper contends that the results offer proof that the effective use of digital technology in education relies on critical assumptions, namely, the need for teachers and students to possess a positive perspective and essential digital literacy skills. (Alakrash & Razak, 2021)

## **2.10 Culture and Linguistic Preservation**

Culture and language are deeply intertwined components of a community's heritage and identity. Language, in particular, acts as a conduit for cultural expression, passing down traditions, values, and unique worldviews from one generation to the next. Nepal, known for its rich tapestry of culture, languages,

customs, traditions, and values, has witnessed a noteworthy trend in the past decade: an increasing number of Nepalese individuals are seeking better employment opportunities and improved education abroad. However, this migration has led to a disconnect between both older and newer generations and their native culture and language. Language plays a pivotal role in fostering connections and comprehending the values and traditions of one's culture. It forms the foundation for strong societal bonds, especially in cultures that emphasize community over individualism, a characteristic commonly found in many Asian cultures. New parents are making sincere efforts to instruct their children in the language spoken by their parents and grandparents, aiming to enable effective communication with their extended family. In doing so, parents are dedicated to preserving the language of their upbringing.

## **2.11 Language learning model**

From traditional classroom-based methods to cutting-edge digital platforms, language learning models have evolved over time to adapt to the changing needs and preferences of learners. Language learning models is an approaches, techniques, and methodologies designed to facilitate the acquisition of a new language or the enhancement of existing language skills. According to the writer Seham Almubarak from an online magazine named Medium, there are four vital model for language learning those are as follows:

### **2.11.1 Software based language learning**

This model is widely recognized as one of the most popular and frequently employed approaches for teaching languages focused on everyday life situations, leveraging VR technologies, speech recognition software, and chatbots. These applications offer concise lessons that target specific aspects of daily routines, covering practical topics like self-introduction, ordering food, and travel arrangements. They also present a limited set of vocabulary and short phrases through image-word matching on the screen, enabling users to practice writing exercises or pronounce words using a microphone. The majority of these applications follow the **Freemium Model**, with Pro users gaining access to premium features such as ad blocking, offline usage, and extra materials. The advantage of these kinds of software based language learning platforms is, they are cost-effective choice for teaching phonetics, letters, and basic concepts, while

keeping prices reasonable due to its low per-student marginal cost. (Almubarak, 2022)

The success of software-based language learning applications can be attributed to several key factors. Firstly, the range of languages offered is crucial, with popular applications like Drops and Duolingo leading the way in this regard. Secondly, a robust educational framework plays a significant role, as seen in applications such as Duolingo and Rosetta Stone. Thirdly, the availability of supplementary resources greatly enhances the user experience, with Duolingo, Rosetta Stone, and Babbel standing out in this aspect. For instance, Duolingo features engaging podcasts that tell real-life stories, with each episode thoughtfully designed to use a bilingual approach, incorporating English and the user's target language. (Almubarak, 2022)

Number of Users ( M ), Number of Languages and Total Fundation \$ M

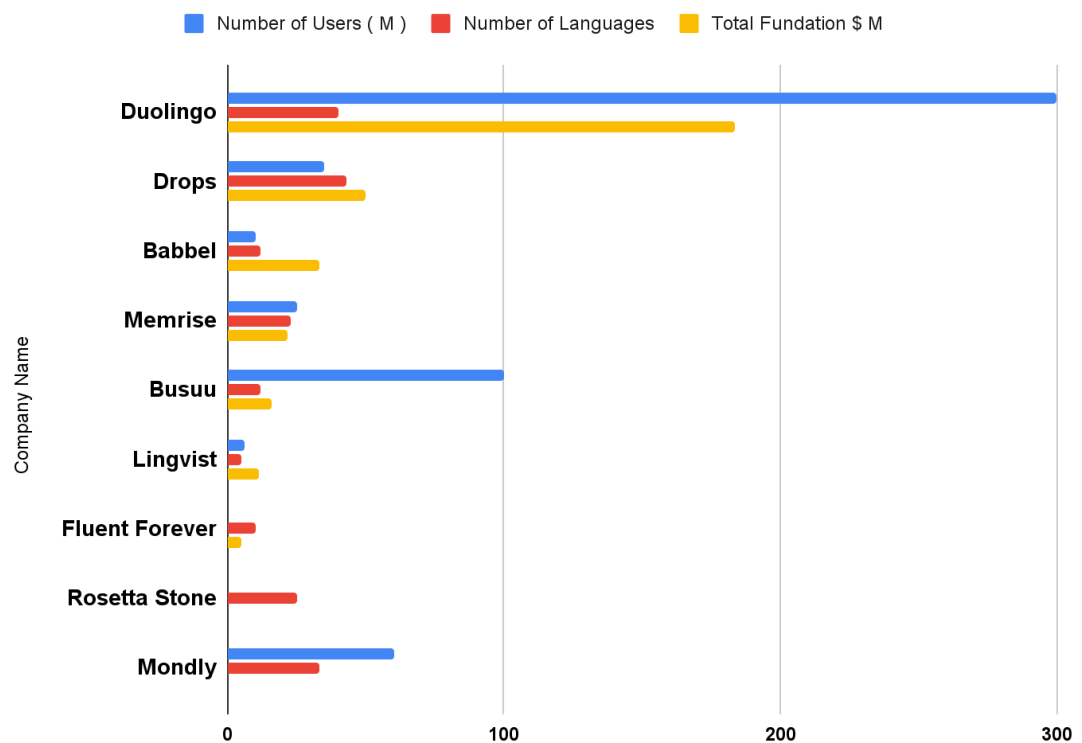


Figure 8. illustrates players using software based learning model which are ranked in order of highest funds. (readjusted the writers model)

Source: (Almubarak, 2022)

### 2.11.2 Live language learning (ONE-ON-ONE)

Live language learning works by connecting language learners with native-speaking teachers through online video chat in real-time. These teachers are

available at any time from anywhere in the world, providing private classes via e-learning platforms. (Almubarak, 2022) these classes can vary from 30 minutes to 60 minutes depending upon the price range.

Few of the advantages of one on one learning includes flexibility to schedule the study time as per users need or demand, user is able to learn in their own pace, it also allows the learners to interact with the native speaker exploring their local culture and custom. lastly, users can choose to pay for each lesson rather than a complete package subscription. (Almubarak, 2022)

### **2.11.3 Structured live language learning**

It is a platform where organized courses created by language experts are taught by experienced teachers, ensuring learners receive quality instruction from both native speakers and trained tutors. These kind of courses provide a versatile range of learning skills including listening, writing, speaking and reading. Quality of learning experience in most cases depends on the quality of material provided and the knowledge in combination with the capability of a teacher. Structured live language learning is appropriate for those who want to learn at a level similar to what universities and schools provide. It includes tests, a minimum number of classes to finish, practice exercises, and live lessons to move to the next level. (Almubarak, 2022)

### **2.11.4 AI based language learning apps**

AI based language learning applications are fairly new and are advancing with each progressive days. It has made a significant impact on the way we live and individual has found a creative way to integrate it in daily life. It has a limitless potential where companies depend on artificial intelligence for teaching language especially the AI impersonates like real teacher to give feedback which is quite helpful while comes to learning. (Almubarak, 2022)

Compared to the traditional learning, AI based language learning can be equally beneficial for the newcomers. while these tools can provide well designed and customized learning experiences they also provide an opportunity for further improvement on learning by providing personalized feedback. (Rebolledo Font de la Vall & Gonzalez Araya, 2023)

### 3 METHODOLOGY

#### 3.1 Research Design

A comprehensive research design methodology has been meticulously developed, encompassing qualitative research approaches. The primary objective is to deeply investigate the preferences, challenges, and overall effectiveness of language learning tools, with a specific focus on the experiences of both parents and children.

In the realm of qualitative research, an initial step Intensive desktop research, leveraging a theoretical study that encompassed information from diverse sources such as books, academic journals, industry reports, and online databases. One of the advantages of qualitative research is the project's extent may evolve as additional information is collected. (*Qualitative vs. Quantitative Research*, 2023) This kind of research assists in a deeper understanding of the subject matter and offers insights that can shape the research inquiries. Secondly, Qualitative research was carried out by conducting an online survey with the potential stakeholders which in this case are the Nepali parents living abroad. Qualitative data collection involves gathering numerical data to examine causal relationships between variables. In this context, questionnaires utilize a multiple-choice format to produce measurable responses, such as "yes" or "no," which can be converted into quantifiable data. (*Qualitative vs. Quantitative Research*, 2023) The survey centered on gathering perspectives and opinions of stakeholders regarding their approach to teaching their children the native language, while also capturing essential insights into the challenges associated with teaching Nepali to children.

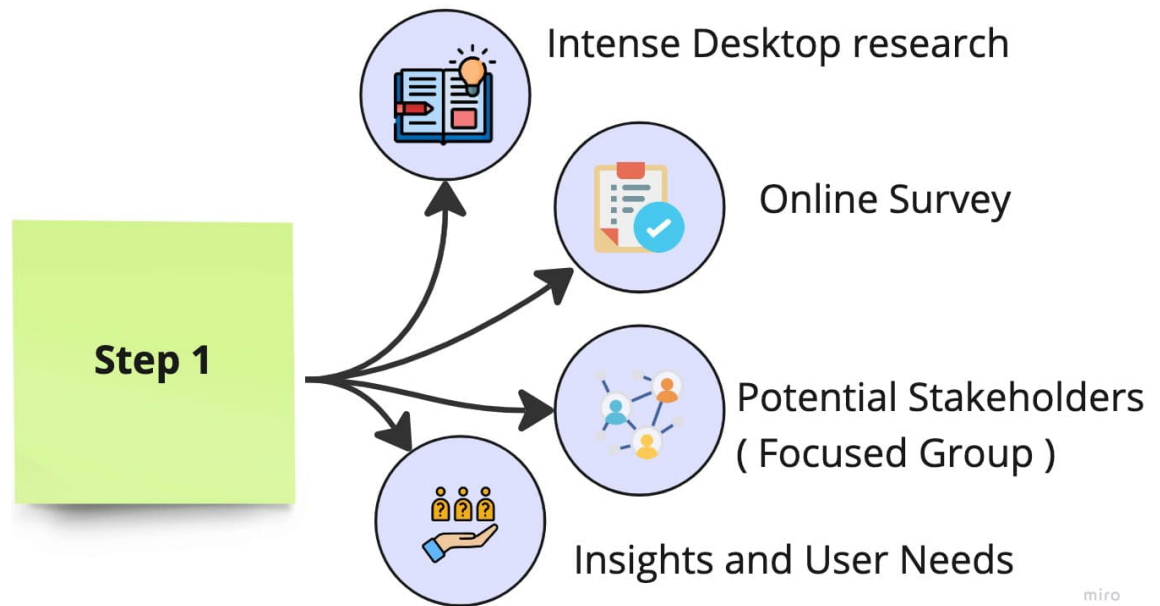


Figure 9: Research design Miro illustration

Source: Own illustration

A Semi-structured interview was designed with thematic analysis in focus on the survey response which will further give an insight into understanding the phenomenon. The interview questions were formulated through an in-depth examination of the responses provided by parents, focusing on common thematic elements within the context.

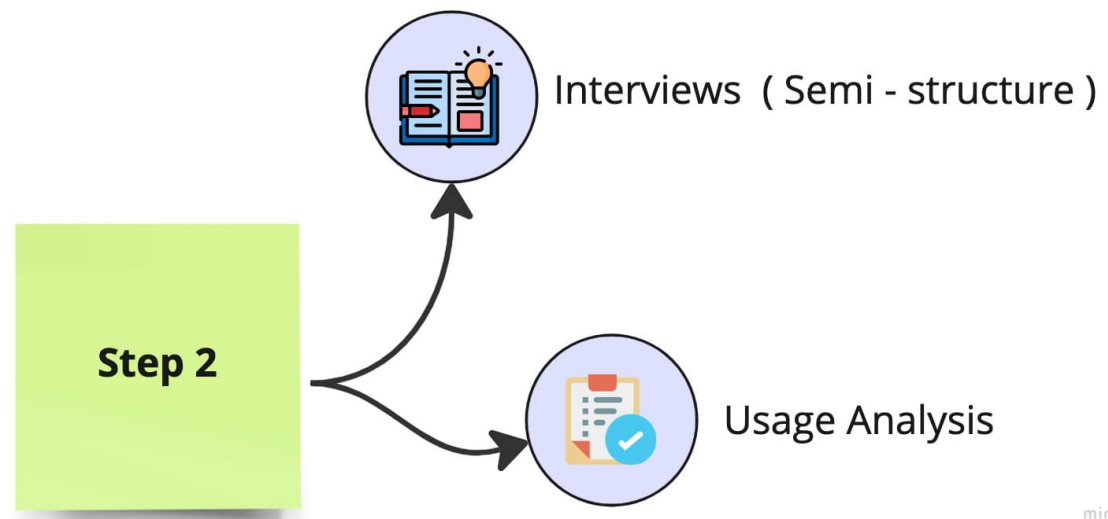


Figure 10: Research design Miro illustration

Source: Own illustration

The research culminates in a comprehensive examination of online survey findings combined with face-to-face interviews (both online and in-person) outcomes. This is followed by the proposal of viable solutions to address

obstacles faced by Nepali parents in teaching their children the Nepali language. This method approach aims to provide a holistic understanding of the human-centric design for language learning for kids, blending the rich insights of qualitative research. Through this comprehensive research design, the study seeks to contribute insights that can inform the development of effective and user-friendly language learning tools tailored to the needs of young learners and their parents.

### **3.2 Research Scope**

The research adopts a human-centered design approach for validating new product ideas, as illustrated in Figure 11. Within the context of new product development, this case serves as a foundation for idea screening, leading to the validation of the chosen idea and subsequently contributing to concept development and testing. It is essential to clarify the term "concept development," which, in the existing literature, often refers to the process of experimenting with innovative concepts during the creation of a new product or service. This phase, typically occurring at the outset, plays a pivotal role in understanding people's thoughts and requirements concerning the product or service. In the course of developing new products or services, it is a common practice to explore numerous concepts and then proceed to develop only those few that exhibit the greatest potential (Concept Development and Testing | Nibusinessinfo.Co.Uk, n.d.).

The research incorporates **four principles of human-centered design**, engaging with end-users and striving to identify the precise problem to address. Additionally, there is a particular emphasis on the clarification and ideation stages of the design-thinking process, strategically narrowing the scope of the research.

# Research Scope

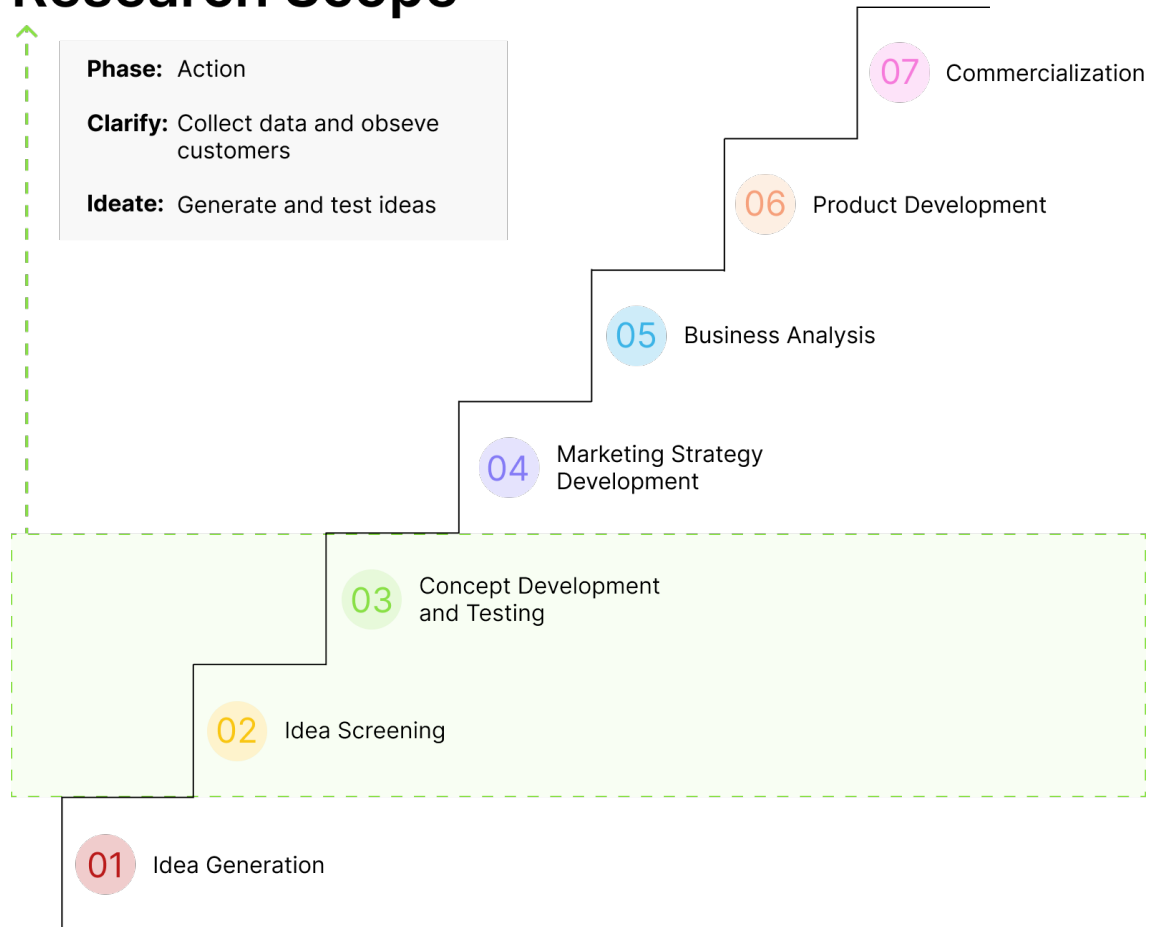


FIGURE 11. Research scope for the thesis.

Source: Own illustration

## 3.3 Research Methodology

Adhering to the human-centered design principle, the initial phase of the research concentrates on understanding the needs and preferences of end users, specifically Nepali kids living abroad, as illustrated in Figure 11. To achieve this, the parents of these children were surveyed and interviewed, serving as a crucial step in identifying and validating the user's requirements. Their feedback played a crucial role in uncovering existing alternatives for Nepali language learning and pinpointing pain points.

In the subsequent phase, interviews were conducted with the children already engaged in learning the Nepali language, aiming to delineate their preferences and dislikes. These interviews proved instrumental in gaining insights into the children's feelings about their learning experiences, providing valuable input crucial for the development of the new product.





### Desktop Research

- Research about Nepalis living abroad from existing sources.
- Identify existing tools or solutions helping Nepali kids to learn Nepali language.



### Online Survey

- Validate the needs from parents of Nepali kids living abroad.
- Understand their current approaches and challenges



### Semi-structured Interview

- Select key informants ( parents and kids who have tried or are trying existing solutions ) among the survey respondents.
- Interview for in-depth information



### Analyze

- Organize the findings based on human-centered design thinking process.
- Clarify the needs and provide list of ideas for development and implementation

**FIGURE 12.** *Research methodology.*

Source: Own illustration

Firstly, we started looking into information about Nepali individuals residing abroad gathered from existing databases. This involved creating a comprehensive list of online platforms for learning the Nepali language. The compiled list will be analyzed to identify any missing elements crucial for effective language for kids on online platforms.

Additionally, an online survey was carried out to confirm the needs of Nepali parents living abroad. This step is vital as parents play a key role in deciding whether to teach their early childhood. The survey sought to understand the current approaches parents are using and gather insights on what they believe would be more effective in the future. The survey also provided key information on how parents are currently teaching their kids the language and the challenges they face.

Lastly, semi-structured interviews were conducted with the parents living abroad and with one of the current learners. This step aimed to gain a clear

understanding of the challenges faced by parents and learners in the language learning process. These interviews contributed valuable insights to the overall understanding of the research.

### **3.4 Data Collection**

Primary data collection was done first through desktop research, existing sources in the database, past research, and academic journals followed by online survey and semi-structured interview. Research about new product development and its challenges, role of parents in learning language, child development, nepali living abroad, culture and linguistic approach and topic that would give more vivid insight to the findings was studied. For this research online survey and semi structured interview was one of the major factors in finding out the needs and challenges to potentially come up with a solution that might provide a solution for teaching/learning Nepali effectively and efficiently.

These methods of data collection were selected due to their capacity to enhance the validity and reliability of research results. Online surveys are valuable for gathering data from the intended audience, providing insights into their preferences, opinions, choices, and feedback. Additionally, they offer an efficient means of engaging a broader audience in the research process. (Bhat, 2019)

Semi-structured interview was chosen because it is a common practice in the social sciences. It is grounded in the idea that the perspectives of interviewees are more likely to be candidly shared in a flexible and open setting, as opposed to a standardized format like questionnaires. (Mashuri et al., 2022) Overall, these methods were chosen with the paramount goal of ensuring accurate and appropriate data collection. (*What Is Data Collection*, 2021)

#### **3.4.1 Desktop Research**

Desktop research, also known as secondary research or documentation research is an approach that relies on existing data collection and publications. Data collection from public libraries, websites, reports, journals, newspaper, magazines, books and videos are considered as a key source. (Blog, n.d.)

Desktop research can be used for different purposes that include.

- Investigate on existing problems or new innovative topics

- Segregation of existing knowledge gap
- Review literature on distinct subject
- Analysing trends and patterns
- To establish new business or understand the existing market (Blog, n.d.)

Like any research, right method should be chosen to get the best result for the relevant findings. Starting from desktop research before primary research is recommended because it will decrease the time required for secondary research. The advantage of desktop research includes cost efficient, data collection is quick, clarity, scalability or adaptability, easily available. On the other hand, disadvantages of desktop research are, the research papers might be out-dated, lack of exclusivity, verification and interpretation might be difficult due to large set of available data. (*Desk Research*, n.d.)

There are basically two types of desktop research, the first one is qualitative research which includes content analysis, narrative analysis and discourse analysis. The second is quantitative desktop research which includes statistical analysis, meta-analysis, and trend analysis. (Blog, n.d.)

### **3.4.2 Online Survey**

According to survey sparrow, online survey is a set of structured questionnaire used to collect data from a target audience for a defined purpose. It can either be an online form, web link or a form on a companies website. The data collected is stored in an online database for easy access. Because everything from making, sharing, and gathering data is done on the internet, online survey is affordable and acceptable survey choice. (*Online Surveys | What Is an Online Survey - Beginner's Guide*, n.d.)

Creating an effective survey involves ten proven steps: First, define a clear and achievable goal for your survey. Then, save more personal questions for the end and avoid making the survey overly long. Focus on using closed-ended questions, and think about including a survey incentive. Avoid leading questions, keep answer choices balanced, and be cautious with absolutes as they can affect response quality. Steer clear of asking double-barreled questions, and always

preview your survey before sending it out. (*Survey Best Practices & Design Guidelines*, n.d.)

For an online survey to be dependable, it should give similar results when done again in similar conditions. To check this, we can use methods like test-retest, split-half, and internal consistency. Test-retest means giving the same survey to the same group at two different times and checking if the results match. Split-half divides the survey in half and compares the results for consistency. Internal consistency checks if the questions in the survey are related and form a logical scale. Content validity checks if the survey's questions are right for the topic and people being studied. Construct validity sees if the survey measures what it's supposed to and how it relates to other ideas. Factor analysis is one method for construct validity. Criterion validity compares the survey to another measure or standard. with the above protocol it is easier to ensure the reliability and validate the online survey conducted. (*How Do You Compare and Contrast Online Survey Methods with Other Research Methods?*, n.d.)

### **3.4.3 Semi-structured Interview**

A semi-structured interview can be described as a data gathering approach where questions are posed based on a predefined thematic structure, but these questions are not rigidly ordered or phrased. Semi-structured interviews are commonly employed in qualitative research, serving as an exploratory instrument across various disciplines, including marketing, social sciences, survey methodology, and other research domains. Semi-structured interviews combine elements of both structured and unstructured interviews, where some questions are predetermined, others are spontaneous and unplanned. Because semi-structured interview are both structured and unstructured it gives us the advantages of comparable, reliable data, and the flexibility to ask follow-up questions. (George, 2022)

A critical part of a research is to analyse the outcome of an interview. It would save us a significant amount of time if we organize the interview outcome with identify unique responses which will further help to present the findings along with discussing and using the data later to move forward and conclude in the later section. (Shakespeare, 2019)

## 4 ANALYSIS

### 4.1 Desktop Research

Existing language learning platforms were analysed for their current offerings and approach. There were four such major providers which has a somewhat structured learning course for the beginner. The list as follows were analysed in depth.

Table 2. Benchmark of existing Nepali language learning platforms.

S.No.	Solution Provider	Country	Solution	Model
1	Kacaaki	USA	Nepal learning from experienced teachers in Nepal	Paid
2	Udemy	Global	Platform that connects learners with instructors	Paid
3	Sabdamala Nepalese Language School	Australia	Nepali language and cultural values classes for school-aged children from 5 to 12 that are enrolled in New South Wales (NSW) mainstream schools	Paid
4	Nepali Pathashala and Learning Academy	Global	Nepali language classes including extracurricular activities such as dance, music and sports	Paid

#### Kacaaki

Founders of Kacaaki are Nepali parents who got inspired by the success of their kids learning Nepali language online taught by experienced Nepali teachers based in Nepal. The founders are based in the United States of America and offer their services for Nepali families globally. They have standard and customised courses offered to students individually or in a group of five. One session per week for individual lessons cost 110 US Dollars whereas two sessions per week cost 200 US Dollar per month. In the case of group lessons, one session per week costs 40 USD per month and 440 USD per annum whereas two sessions per week cost 75 USD per month and 825 USD per annum. In addition to language courses, they also offer dance classes. (kacaaki, 2021)

## **Udemy**

Udemy is a global online learning platform where the instructors offer their services to their students. The courses are offered in more than seventy five languages. As of June 2023, there are over sixty four million learners and two hundred and ten courses. For Nepali language learning, there are very limited offerings available. Even though a generic search with the keyword 'Learn Nepali' returns over ten thousand results, there are only four instructors that look genuine stacked under 'Beginner' level filter. Out of these, two courses are offered free of cost while the others are all paid courses. The most expensive course costs about sixty five Euros while the other courses usually range about twenty euros. (*Barsha Basnet | Nepali Language Teacher, n.d.*)

## **Sabdamala Nepalese Language School**

Sabdamala offers structured language program to school-aged children from five to twelve years in Sydney, Australia. It is a collaboration between the Gurkha-Nepalese Community Inc. (GNC) and Guthi Australia Inc. to offer their program in both classroom and external environment like excursions to students of Nepali origin enrolled in New South Wales (NSW) mainstream schools. Their teachers, who are trained in community language training, teach the Nepali language and cultural values using a blend of Nepalese content and Australian teaching methodologies. The term fee for the students is a hundred Australian Dollars and sixty five Australian Dollars for the second child of the same family. (*HOME, n.d.*)

## **Nepali Pathashala and Learning Academy**

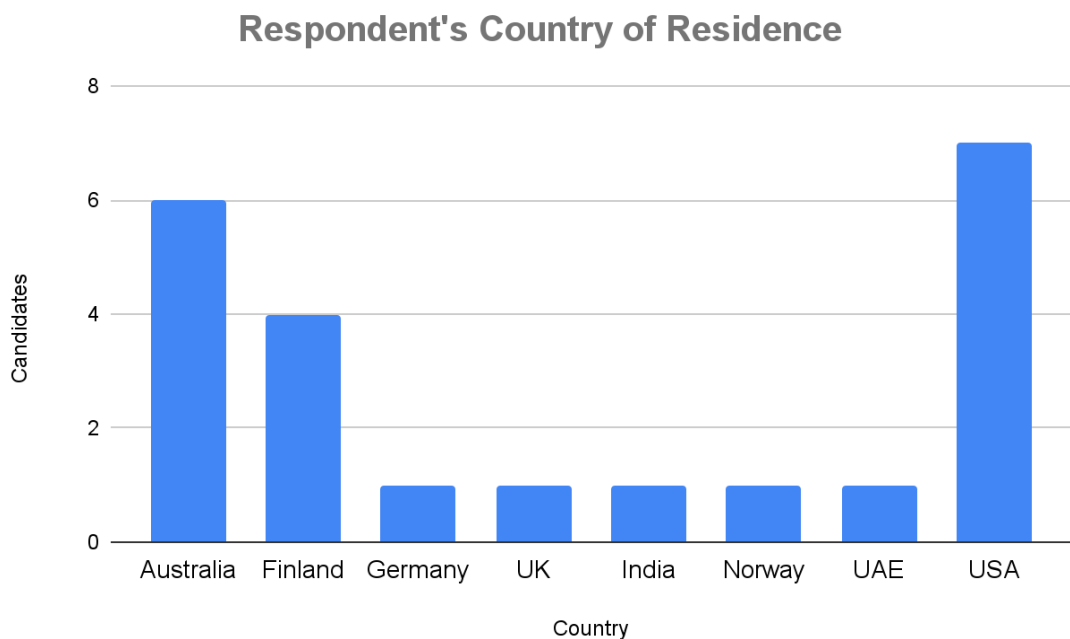
Nepali Pathashala is a not-for-profit Nepali language and culture initiative driven by the volunteers and community in Queensland, Australia. Since 2012, the centre which operates under Nepalese Association of Queensland Inc (NAQ) offers two hours long Nepali language courses on Sundays at four locations. The two hour course also includes half an hour extra curricular activities like dance, music, and sports. The cost for the courses are not disclosed. (*Nepali Pathashala & Learning Academy – Nepalese Association of Queensland, n.d.*)

## **4.2 Survey Outcome**

A Google online survey with questions as listed in Appendix 1 was conducted in 2023 to understand the Nepali language skills of kids living outside Nepal. The

questions were addressed to the kids' parents to understand their motivation, current methods used, challenges faced and their general assessment of their kids' Nepali language skills. One of the objective other than the insights listed earlier were to identify the key informants to be selected for the semi-structure interviews based on their responses to the online survey. To increase the number of respondent second round of the same questionnaire was provided to potential 7 candidates, unfortunately non of them responded for the questionnaire so the analysis was carried out with limited number of respondents.

There were 22 responses filled in by the parents of the Nepali kids living outside Nepal. 32% of the respondents were currently living with their kids in the United States of America, followed by Australia (27%), Finland (18%) and other 5% each in Germany, UK, India, Norway, and the United Arab Emirates as shown in Figure 5.

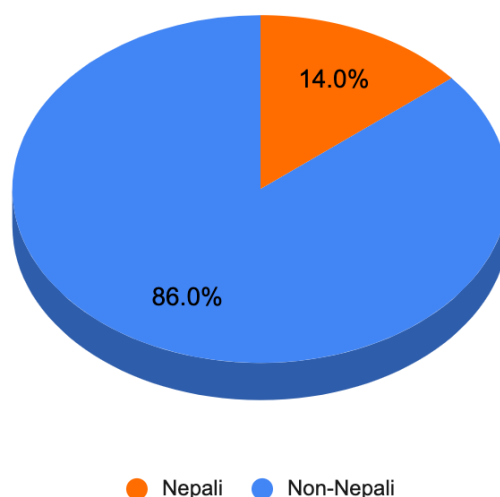


*FIGURE 13. Online survey respondents' country of residence.*

55% of the respondents had only one kid, 41% had 2 kids and rest 5% had three kids. The average year for the first kids was 4,8 years and the oldest among the group being ten years old and the youngest being three years old. Similarly, the average year for the second kids was 2,4 years and the oldest among the group being five years old and the youngest a year old.

Majority (86%) of the respondents had a Nepali spouse while only three (14%) respondents had a non-Nepali spouse as shown in Figure 14. However, only 14% of the respondents reported to use only Nepali as the language of communication with their kids while 86% of the respondents used at least two different languages at home to communicate with their kids. In addition, 73% of the families used both English and Nepali language as their means of communication with the kids.

#### Nationality of the spouse

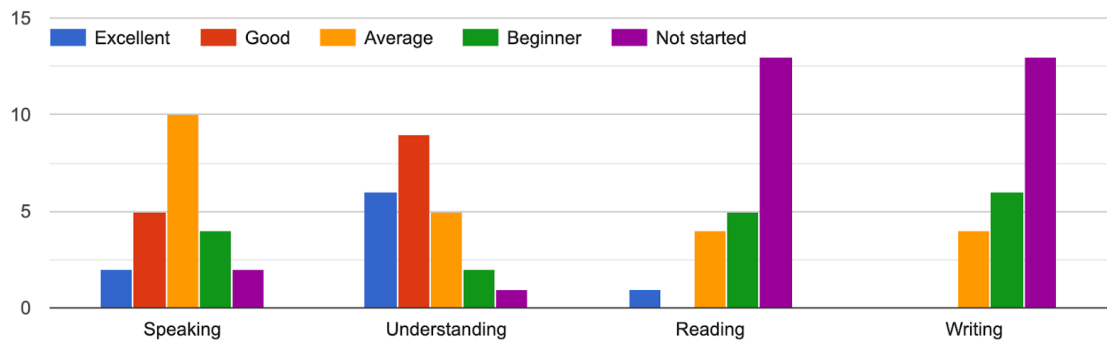


*FIGURE 14. Nationality of the spouse of the survey respondents.*

On further analysing, about 36% of the parents believed that their kid(s) had best proficiency in Nepali language and the same percentage rated their kids' proficiency in English language while 14% marked their kids' proficiency for both Nepali and English languages. While answering their first kids' Nepali language speaking proficiency, more than 45% opted for 'Average' while only 32% opted for either 'Good' or 'Excellent' as shown in Figure 15. The response for understanding of Nepali language by the first kids was high at a cumulative 64% as the respondents rated either 'Good' or 'Excellent'. However, neither reading nor writing of Nepali language had been started for about 55% for the first born of the respondents.



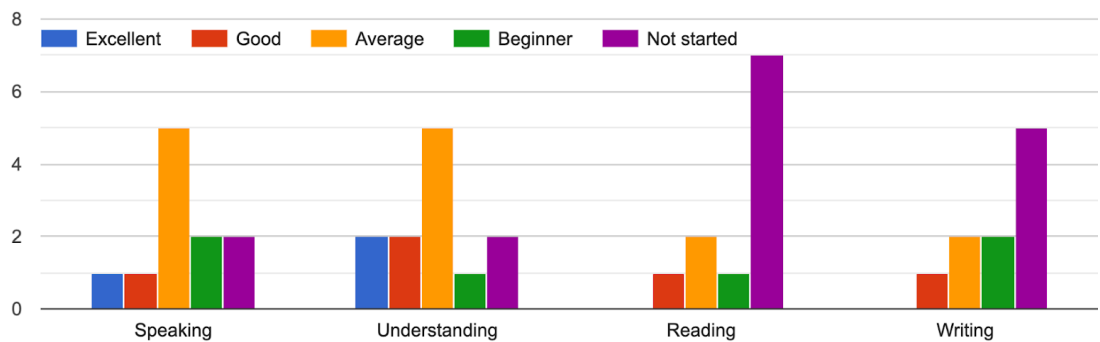
Please rate your kids competence in Nepali language. (Kid #1)



*FIGURE 15. Nepali language competence for the first kid rated by the respondents.*

Similarly, 42% of the second born of the respondents had average skills for both speaking and understanding in Nepali language as shown in Figure 16. While the majority (64%) had not skills developed for reading and at the same time 50% of the kids had not started writing in Nepali language.

Please rate your kids competence in Nepali language . (Kid #2)



*FIGURE 16. Nepali language competence for the second kid rated by the respondents.*

Regardless the current competence of the kids in Nepali language, all the responded unanimously wanted their kids to learn the Nepali language for the reasons cited in Table 3. The respondents wanted their kids to learn Nepali language to be able to bond with their grandparents and extended family in Nepal. While some cited the importance of Nepali language as their mother tongue to stay connected with their community, culture, and traditions. While few others

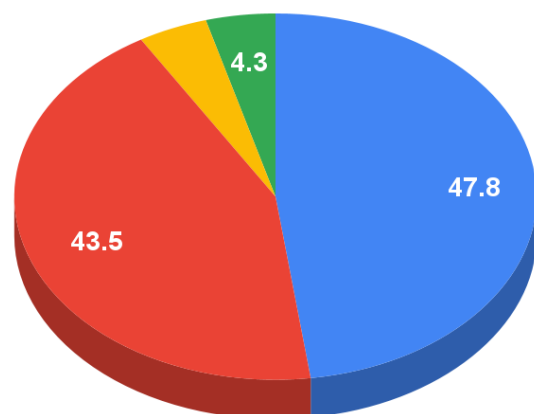
believed having multiple language skills could help their kids to become good communicators. However, only 50% of the respondents have been actively trying to teach Nepali language to their kids as shown in Figure 17.

TABLE 3. Respondents' reasoning for their kids to learn Nepali language.

Respondent	Reasoning
1	To nurture the bond with grandparents and other family members back home in Nepal
2	I want him to be able to communicate well in Nepali
3	It's nice to have multiple language skills
4	Yes because it's our mother language
5	Nepali is our national language and I would like my daughter to know the Nepali language.
6	To communicate with grandparents
7	Because we are Nepalese and most of our relatives speak Nepali. I would be happy if my kid could learn the Nepali language.
8	To be able to communicate with grandparents and relatives in Nepal.
9	If they know their own language it's better for them to communicate with other non-English speaking family members.
10	I want them to know our culture and tradition.
11	Because language is a means of communication so that language proficiency is vital to become an effective and efficient communicator. Language proficiency also enables them to understand that cultural aspects of the society and regions. Above all it helps to broaden the horizons of opportunity to children.
12	It helps connect them with broader family.
13	Just so that they can communicate to relatives and grandparents, this will also increase sense of belonging and attachments towards family members in Nepal.

14	I want my daughter to communicate with my family members including my mom and laws as they are not comfortable speaking in English.
15	Able to communicate her grandparents and learn Nepali culture.
16	I want her to be able to communicate in her native language.
17	I want them to be able to speak with other Nepalese
18	I think majority of Nepali parents would want their kids to learn the language. The kids are already being raised in English speaking country meaning that they'd eventually learn English anyway so it only makes sense that we teach them our language as a priority.
19	It helps to communicate with Nepalese people and helps to learn Nepali culture
20	Easy to communicate with grandparents and relatives in Nepal
21	Kids should learn mother tongue, so that the language keeps alive for generations.
22	To make them aware of their culture language is a necessity.
23	Want her to be able to communicate and connect with other family members back home who don't speak english

Have you been actively teaching them Nepali language?



● Yes
 ● No
 ● Sometimes
 ● Not really

*FIGURE 17. Respondents response to their actions*

Regarding the methods used to teach Nepali language to the kids as highlighted in Table 4, the respondents mostly mentioned having conversations in Nepali with the kids. Others have taken the help of Nepali story books, videos meant for learning or songs, storytelling, and exposing to other kids in the community speaking in Nepal. Some of the respondents have also enrolled their kids to some online and in-person Nepali language classes.

TABLE 4. Methods currently used to teach Nepali language to the kids.

Respondent	Current learning methods
1	More conversations in Nepali And reading nepali story books
2	Nepali book, and just regular conversation with the child
3	We haven't tried any method yet. We just speak Nepali with our daughter.
4	Conversation
5	We usually talk with her in Nepali. Sometimes we put on Nepali learning videos on youtube. And talking with family members in Nepali language is also helpful.
6	Not
7	We haven't tried Nepali book/ alphabet yet because he has just started to read English and Finnish books.
8	Communicate with them in Nepali
9	Try to talk neaplese in home, even they ask questions in English we try yo give answers in Nepali.
10	Basically taking them to Nepali get together and playing with Nepali friends. participating in Nepali cultural programs.
11	Audio- visual method along with music . Apart from that mimicry , imitation , direct method via interaction with gestures and postures .

12	Story telling, nepali kids songs, translate the words and telling them what it means
13	Speak Nepali with them
14	She stayed with here grand father and mother so she learned the Nepali language.
15	Talk to her in Nepali
16	Speak with her in Nepali. She also watches few programs in youtube that teaches Nepali language which has been beneficial for her.
17	None
18	Always Communicating to them in Nepali at home, Have them listen to Nepali rhymes.
19	Nepali school
20	Online courses
21	I have Nepali books where she can read and write and learn Nepali.
22	From primary school Nepali books.

The respondents have also faced challenges to teach Nepali language to their kids as listed in Table 5. The respondents mentioned that the kids spend most of their time at school where the language of communication is not Nepali. Moreover, the respondents also highlight the lack of Nepali speaking community to foster Nepali language interactions. Some kids have found Nepali alphabets very challenging to learn and in absence of coaching classes or learning resources, the respondents are having troubles to teach Nepali language. Few respondents have also had problems with consistency, motivation, and time to teach Nepali language to their kids.

TABLE 5. Respondents' challenges faced to teach Nepali language.

Respondent	Challenges faced
------------	------------------

1	Since the kids start school, they spend majority of their time conversing in other language than Nepali. So naturally when they speak, that language comes out first from their mouth.
2	Consistency
3	The biggest challenge is there is no need for these kids to learn Nepali language. The parents understand the local language. The kids speak local language at Day care center. They don't really need to communicate with relatives in Nepal. Even worse, the time zone difference doesn't allow the kid here and relatives in Nepal to have a proper environment/situation to have a good conversation. The small kids don't focus on video calls anyway. The person on the screen is just like someone talking in youtube for them. Nepali Talk FM, Community Events may help
4	So far it has been a easy ride. We speak nepali at home, he follow us.
5	The biggest challenge I feel is the lack of Nepali speaking community where we live. We are residing in the regional area, so its difficult to find people speaking in Nepali language as usually found around the suburbs where there is high density of Nepali speakers.
6	Too many language is a confusion for kids
7	Alphabets
8	No other sources to learn
9	If they find same age group children speaking nepalese language then it's will motivate them as well to learn and to communicate.
10	Society is all English speaking! Her friends all speaks English, school is all English based. So even we try to communicate in Nepali it doesn't work.
11	First definitely lack of adequate linguistic exposure. Second environment including both school and outside. Third may be not being able to motivate and creating Nepali language learning environments to children. Last but not least could be

	not being able to circulate the value and significance of the mother tongue in the future.
12	Making them Read and write as their schooling is completely in English language.
13	Opportunity to practise more. Most of the time they deal with English speakers.
14	Time and motivation
15	Lack of other kidss that speak Nepali.
16	In Nepal she would have studied reading and writing in school but here we may have to teach her ourself.
17	None
18	Them attending day care centres and schools where English is the primary language and socialising with their non English speaking friends and watching all the english language tv programs would be the biggest challenge.
19	Lack of resources
20	No one to practice Nepali.
21	They have less time to practice the language as it is spoken at home only. Similarly, they meet other people from Nepali community only sometimes, so they do not get expose for speaking practice.
22	Non availability of coaching classes.

### 4.3 Interview Outcome

For convenience, all the interviews were conducted in English. The first and fourth interviewees are living in Finland and are from the same household. The interviews were conducted in person, i.e., face to face, for the first and fourth interviewees. Meanwhile, the second and third interviewees were from Australia, so the preferred method to conduct their interviews was chosen as Facebook Messenger.

Based on the semi-structured interviews, the following discussions were recorded and summarised:

### **Interviewee 1: Nepali parent in Finland**

Interviewee 1 had moved to Finland to study in 2007. She got married to a Finnish man and has two daughters now aged thirteen and eight respectively. As a mother, she was quite invested in teaching her kids Nepali language and culture as she believed that in absence of a common language her parents would lose connection with their grandkids. Moreover, she also believed that the kids will learn about Finnish culture naturally, but introducing them to Nepali culture required her efforts and intervention. With her husband, she decided to only use Nepali with the kids which was also recommended by the daycares and schools to the parents of multicultural families living in Finland. As a result, she recalled using Nepali rhymes, songs, and cartoons in YouTube to help her kids become acquainted with Nepali language in their formative years.

In addition to her conscious efforts, she also credited her kids learning the language to her younger brother who followed after her to Finland to study and stayed a number of years with her and the kids in the same house. She stressed that her brother's lack of Finnish language skills forced her kids to use Nepali language to communicate with him in the house. On his suggestion, she enrolled her elder daughter to a Nepali language course taught online. She recalled that they found the service provider by reading a news article in Nepali online news portal. This start-up had hired Nepali teachers in Nepali and were providing Nepali lessons to Nepali kids living abroad online. The teacher had acknowledged that her daughter could use Nepali language quite well. However, she wanted her daughter to be able to read and write in Nepali so that she can follow simple instructions written in Nepali while visiting Nepal.

Her family currently uses Nepali to discuss small topics that cannot be discussed in public in Finnish. In that sense, she acknowledged that Nepali language had become a secret language to communicate with her daughters in Finland. Unfortunately, her elder daughter did not want to continue the course and has since dropped out. Moreover, her younger daughter has not even started the



course due to conflicting hobbies and lack of time to commit to supporting the kids in providing the support required to excel in reading and writing in Nepali.

### **Interviewee 2: Nepali parent living in Australia sending his daughter to Nepali course**

The family of Interviewee 2 is based in Eastern Australia. Their only daughter was born in Australia while her parents were studying and working. They use Nepali language to communicate with their daughter and she can converse in Nepali. However, they noticed a change after their daughter started school. She started becoming reluctant to use Nepali as she was exposed more to the English language during the entire day.

He wanted his daughter to keep conversing in Nepali as he wanted her to be in contact with his family living in Nepal. As a concerned father, he decided to enrol her in an in-person course where a group of Nepali kids were taught Nepali in conjunction with dancing and drawing. Since then, he has noticed development in her writing and reading skills. He believes that meeting other Nepali kids and doing common activities together has eased her learning process. He thinks that as a foreigner kid living in Australia, she feels pressured to adapt and prove that she belongs to the English-speaking society. He felt committed to continuing investing in the course for his daughter, and hoped that she will be proud of her heritage in the future.

### **Interviewee 3: Nepali parent living in Australia**

The second family interviewed was a Nepali family living in Western Australia for over twenty years. Their daughter was born in Australia and was exposed to the English language right from the start. As a father, he wished his daughter to learn the language as he wanted her to be able to communicate with her grandparents living in Nepal. The father himself is active in social events organised by the Nepali community and wanted his daughter to be able to converse with the Nepali community in Nepali language and enjoy the cultural programs.

Even though his daughter can understand Nepali which is the language of communication in the family, she cannot speak Nepali. She usually responds in

English while the others are talking to her in Nepali. The interviewee is a teacher by profession, but has not been able to identify ways to teach Nepali to his daughter. He has a pessimistic opinion about the services found in Australia as mentioned by the interviewee 2. He believed that those language courses coupled with dance and drawing are not effective in learning the language, but just a way to keep the kids engaged.

#### **Interviewee 4: Daughter of Nepali-Finnish couple**

Interviewee 4 is the elder daughter of Interviewee 1 who had taken the online Nepali course. She used to speak Nepali with her mother since early childhood so, she felt confident in speaking Nepali language, and she acknowledged that her reading and writing capabilities improved after taking the course. In addition to her mother, maternal uncle, and sister in Finland, she uses Nepali to communicate with her grandparents and family in Nepal. She emphasized that she plays online games with her cousin brother in Nepal. She also believes that she got acquainted with the language even more during her annual trips to Nepal as a kid. The visits forced her to use the language with her cousin brother to be able to play together.

She shared positive feedback regarding the online course and the course instructor. Her instructor's appreciation of her Nepali language skills motivated her to do well in her group. She was also able to meet other Nepali kids in the United States through the course. However, her classmates were not as proficient as her which frustrated her as she felt the course was not proceeding further well. She believed that the kids in the course had different proficiencies which delayed the learning for the fast learners. She would have preferred to be in a course with kids of equal proficiencies which would remove the delays in the learning process.

## 5 DISCUSSION

The parent's willingness to keep their kids connected to the kid's grandparents, extended family, mother tongue, and culture as highlighted in Table 6 shows a clear indication that the idea to create a solution for Nepali language learning would make sense. The parents being the decision maker and the buyer in the case gives a strong indication that they will be willing to invest in their kids and a solution that will allow them to learn the Nepali language. However, from the learners' perspective, it is not their own drive or wish to learn Nepali language and culture.

TABLE 6. Trends in respondents' reasoning for their kids to learn the Nepali language.

Respondent	Reasoning
1	To nurture the <b>bond with grandparents</b> and other <b>family members back home</b> in Nepal
2	I want him to be able communicate well in Nepali
3	It's nice to have <b>multiple language skills</b>
4	Yes because it's our <b>mother language</b>
5	Nepali is our <b>national language</b> and I would like my daughter to know Nepali language.
6	To <b>communicate with grand parents</b>
7	Because we are Nepalese and most of <b>our relatives speak Nepali</b> . I would be happy if my kid could learn Nepali language.
8	To be able <b>to communicate with grandparents and relatives in Nepal</b> .
9	If they know their <b>own language</b> it's better for them to communicate with other non- English speaking family members.
10	I want them to know our <b>culture and tradition</b> .
11	Because language is a means of communication so that language proficiency is vital <b>to become an effective and efficient communicator</b> . Language proficiency also enables them to understand that cultural aspects of the society and

	regions. Above all it helps to broaden the horizons of opportunity to children.
12	It helps <b>connect them with broader family</b> .
13	Just so that they can <b>communicate to relatives and grandparents</b> , this will also increase <b>sense of belonging and attachments towards family members in Nepal</b> .
14	I want my daughter <b>to communicate with my family members</b> including my mom and laws as they are not comfortable speaking in English.
15	Able to <b>communicate her grandparents and learn Nepali culture</b> .
16	I want her to be <b>able to communicate in her native language</b> .
17	I want them to be <b>able to speak with other Nepalese</b>
18	I think majority of Nepali parents would want their kids to learn the language. The kids are already being raised in English speaking country meaning that they'd eventually learn English anyway so it only makes sense that we <b>teach them our language as a priority</b> .
19	It helps to <b>communicate with Nepalese people</b> and helps to <b>learn Nepali culture</b>
20	Easy to <b>communicate with grandparents and relatives in Nepal</b>
21	Kids should <b>learn mother tongue</b> , so that the <b>language keeps alive for generations</b> .
22	To make them <b>aware of their culture</b> language is a necessity.

The learners or the kids are eventually the end users, but their input seems to be missing out in the existing solutions. The need for the kids to learn the language and culture is undisputed based on the survey responses and the interviews. The challenge seems to be assessing where the kids are at with their Nepali language skills, and showcasing the importance of Nepali language in their life to motivate them to learn proactively.

Moreover, the objectives of the parents were also not fully clear. Learning the language can include different aspects like speaking, reading, writing, and listening. It is essential to understand if the parents are happy if their kids are able to understand and speak in Nepali or if their goal is to equip them with reading and writing in Nepali. Based on this, the courses or the milestones could vary.

The parents have also reported that they lack the skills, time, and resources to teach their kids Nepali which is why they usually look up for the solutions. The role of parents in their kids' Nepali language learning also seemed unclear. If the expectations of the parents is to have no role in the learning process, the solution has to be more learner and teacher centric. While if the parents are expected to support their kids in learning the language at home outside their classes, then the role definition has to be clear to set the right expectations and roles & responsibilities.

### 5.1 Analysis of existing solutions

The existing solutions for Nepali language learning (exhibited in Table 2) is further categorised based on the language learning model as discussed in section 2.11 as in Table 7. Software based language learning like in the case of Udemy uses recorded lessons which the learner (or subscriber) uses to learn the language. This model might not be ideal for kids as learning by using recorded lessons requires a longer attention span and self control. This limitation points towards a rather live approach either in-person or online as in case of live language learning (Kacaaki) or structured live language learning (Sabdamala and Nepali Pathshala).

Table 7. Existing solution for Nepali language

<b>S.N.</b>	<b>Solution Provider</b>	<b>Solution</b>	<b>Language Learning Model</b>
<b>1</b>	Kacaaki	Nepal learning from experienced teachers in Nepal	Live language learning (ONE-ON-ONE)
<b>2</b>	Udemy	Platform that connects learners with instructors	Software based

			language learning
<b>3</b>	Sabdamala Nepalese Language School	Nepali language and cultural values classes for school-aged children from 5 to 12 that are enrolled in New South Wales (NSW) mainstream schools	Structured live language learning
<b>4</b>	Nepali Pathashala and Learning Academy	Nepali language classes including extracurricular activities such as dance, music and sports	Structured live language learning

The effectiveness of live language learning (Kacaaki) or structured live language learning (Sabdamala and Nepali Pathshala) can be attributed to the role of the teacher, the parent, and the child in the learning process. For instance, in case of Kacaaki, the parent facilitate the learning process

As observed during the research, none of the Nepali language courses conducted the pre-assessment of the kids before enrolling them into their courses. In lack of such pre-assessments, all the kids' Nepali language skills were assumed to be the same, which more than often is not the case. Therefore, the need to identify ways to assess the current skills of the learners and allocate or assign them to groups or levels that would fit their needs for development requires a thorough rethinking. Pooling all the kids in one-fit-for-all course can be counterproductive as the fast learners or kids with relatively better Nepali skills can find the exercises boring or redundant which eventually results in loss of interest towards the course and the language.

None of the solutions specify the role of the parents in the learning process. Based on this, it can be assumed that the teaching and learning happens between the kids and the teacher or instructor. Since all the solutions are paid, the parents are expecting their non-participation in the process like in other hobbies like swimming. However, language learning cannot work in isolation especially if there are native speakers at home. The solutions have not clearly defined the roles of the parents to set clear responsibilities on what happens after

the classes. Kids are exposed to the language class and the teacher on a once a week or twice a week basis, and they spend the rest of their time at home with their parents. This means that the parents could take up a supportive role in the teaching-learning process which is a missing element in the existing solutions.

## 6 CONCLUSION

Based on the research findings, the researcher's recommendation to KTM Labs would be to pursue their idea of building a tool for learning Nepali language for the Nepali kids living outside Nepal for the following reasons:

- **Demand in future**

Even though the online survey was run for a short period (June-July 2023), there were twenty three responses received from the Nepali parents living abroad. The parents were equivocally agreed on the importance of Nepali language and culture in their children's lives and how it could impact their relationship with their families in Nepal. With the number of Nepali youth leaving Nepal for better opportunities in countries/regions like Australia, USA, UK, and Europe, the need seems only to amplify in the years or decades to come. This builds a strong business case for solutions providing Nepali language and culture to the Nepali kids living abroad. Moreover, the families living abroad will be willing to pay in foreign currencies comparable to their kids' hobbies abroad which makes a sound case for business development.

- **Lack of competition**

The benchmarking exercise based on the analysis of the existing solutions clearly indicates that either the live language learning model or the structured live language learning have received some acceptance by the parents in Australia and garnered some success with the learners (Nepali kids). For KTM Labs, they could take the approach of building a platform-based model with courses designed by experts, and courses delivered by trained teachers.

If KTM Labs decides to pursue the business opportunity forward, they should do a thorough benchmarking of the existing solutions to understand their strengths and areas of development. Since the first-movers like Kacaaki have already paved a path for their competitors, it can provide rich insights for the new improved solution development. The missing attributes, as observed by the researcher, in the existing solutions are:



- **Missing end user perspective**

For most part of the research, it can be noted that the parents are driving the need as they want their kids to learn the Nepali language and culture. Moreover, the teachers are taking charge of defining the course and delivery structure. In all this, the Nepali kids who are the actual end users are almost being forgotten. It is essential for them to participate and enjoy the learning process rather than being forced by their parents or the teachers.

KTM Labs can focus on designing their solution to include the learners' perspective in their solution. Human-centered design practices are important to develop inclusive solutions where the end users have their say. This means KTM Labs would require to spend more time with the kids before they develop their early prototypes.

- **Modular approach**

The existing solutions seem to band the students under their basic modules like once a week or twice a week lesson delivery. They have clubbed all elements of language learning which are reading, writing, speaking and listening into one. KTM Labs can take an approach where they can begin with two modules like reading and writing, and speaking and listening to allow the parents to pick what they deem is important for them and their kids while living abroad. If the parents' main objective is to capacitate their kids to communicate with their families in Nepal, would it necessitate them to be able to read or write in Nepal, or will it suffice for them to develop speaking and listening skills only.

- **Gamification**

Most of the solutions are focused in a classroom set-up learning with only few including dance or excursion in their solution. None of the existing solution providers have mentioned gamification techniques in their solution which might be an opportunity for KTM Labs to explore in their solution prototype. Like in other hobbies like swimming or sports, the kids usually are enthusiastic to participate proactively, and KTM Labs target should be to infuse the same enthusiasm in their solution or delivery. Gamification

could be an avenue as seen in the structured live language learning solutions where external events or extra curricular activities were also a part of the learning courses most probably to engage the learner kids.

- **Role definition for Parents**

None of the solutions engage the Nepali parents into their language learning solution. This approach needs a rethink if meaningful impact from the once or twice a week classes are to be seen. KTM Labs can work towards identifying ways to equip or train the parents to support their kids in the learning process. Adding some exercises that the parent and the kid can do together might help develop a positive ecosystem for learning.

## **6.1 LIMITATIONS**

The thesis study, like other studies, is not free of certain limitations. First being the limited knowledge and experience of the thesis researcher. Since the researcher is not the domain expert in language, learning pedagogy or IT solution development, there might be some areas of lapses in the research. These lapses can be filled by future researchers by picking and developing on the themes raised by the thesis researcher.

The research might also be a reflection of the researcher biases embedded as an individual and accumulated over the years. These biases might impact the analysis of the surveys as well as the interpretation of the responses received during the interviews. The researcher bias is subjective to individuals which means that limiting it would require extreme discipline and rigorous practice in the academic research field.

The third limitation might also arise from access and quality of sources and resources used in the research. Some of the solutions or websites could only be assessed with paid access limiting the information available in the free versions. This limited access might have impacted the understanding of the solutions or topics covered in the thesis study.

Moreover, limited research available on the topic of the thesis might also have impacted the insights that could be derived from existing materials. Nepali

families living abroad with kids is a growing phenomenon which might pave the way for future researchers to investigate deeper about Nepali language and culture. The survey can, in the future, be expanded or concentrated by regions that are seeing the growth of Nepali families.

The study incorporates the views of the parents, the kids, and the existing solutions; however, it misses out on the viewpoints of the teacher or instructor. The vantage point of the teacher or instructor is missing not because the researcher did not consider their input valuable. It was mostly because of the time limitations to complete the thesis on time. Partly, the decision to omit this stakeholder was also to limit the scope of the research. This limitation can actually be a potential way forward for the future researchers to conduct a detailed research including all the relevant stakeholders, or alternatively by picking specific stakeholder to improve the focus of their research.

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## 7 APPENDICES

### Appendix 1. Online Survey Questions (example)

1. In which country do you currently live?
2. How many kids do you have? What are their ages?
3. Is your spouse a non-Nepali speaker?
4. Please list the languages that are spoken with the kids.
5. In which language(s) do your kid(s) have the best proficiency?
6. Please rate your kid's competence in Nepali language. (Kid #1..3)
7. Would you like your kid(s) to learn Nepali language?
8. Why or why not? Please justify your answer above.
9. Have you been actively teaching them Nepali language?
10. What are the methods that you have tried or have thought of using to teach the kids Nepali language?
11. Which days and/or times have you found it easier for your kid(s) to learn the language?
12. What do you think are the biggest challenges in teaching or learning of Nepali language by your kid(s) while living abroad?

Appendix 2. Semi-structured Interview Questions (example) Question to parents

1. Do you want your kids to learn Nepali language? Why?
2. What steps have you taken to support Nepali language learning at home?
3. Is your kid(s) interested in learning Nepali language?
4. Have you tried any providers/teachers to facilitate Nepali language teaching?
5. What do you appreciate in Nepali language providers? What are the areas of development of those solutions?



### Appendix 3: Question to learner

1. Do you want to learn Nepali language?
2. How effective was the previous language learning experience?
3. what approaches have you taken to learn Nepali language?
4. Where do you use Nepali language in daily basis?