Khan Academy

Communication Coach Bot

Verion 2.1

Table of Contents

Introduction

Organizations need to ensure every employee is equipped with the correct knowledge of the product/service they are working on. Traditionally, classroom-based training sessions have been the go-to way to impart this knowledge. However, due to factors like

1. Fast-changing technology
2. Mobile workforce
3. Inability to allocate a whole work day for learning
4. Ineffective learning in class room session
5. Need for continuous engagement

organizations are leaning towards micro-learning.

Khan Academy's Basic English And Math (BEAM) is an English and Math learning program for workers in various organizations. Since Whatsapp is a ubiquitous mode of communication, organizations can leverage the same platform to reach their customers, provide information, and enable learning.
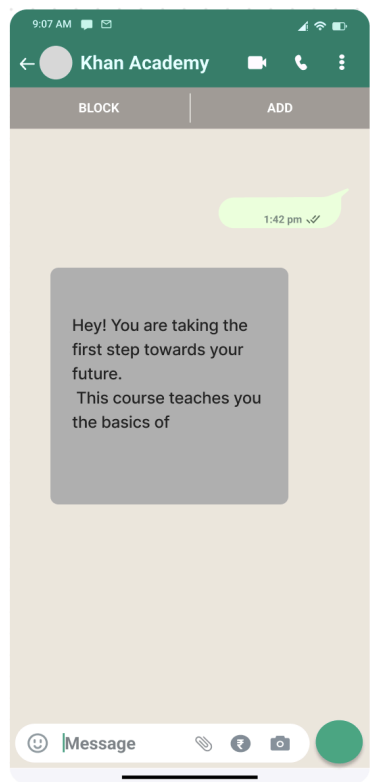
Communication Coach Bot

Communication Coach Bot is a SaaS platform that provides organizations a low-code, no-code approach to set up services to share learning information with their end users in the form of videos, images or text.

Khan Academy engages learners in its BEAM program through the Communication Coach Bot.

Learners receive an SMS or email with a link to a micro-site to enroll themselves in the course. When learners complete the enrollment, learners receive a WhatsApp message from the registered Khan Academy WhatsApp number onboarding them into the course. Subsequently, the Communication Coach Bot sends messages based on the configured workflow.

The Communication Coach Bot platform enables a business to tailor the order and type of messages to the users. It defines workflows for onboarding and then delivering the lessons for the learners.

Cloud and Software Requirements

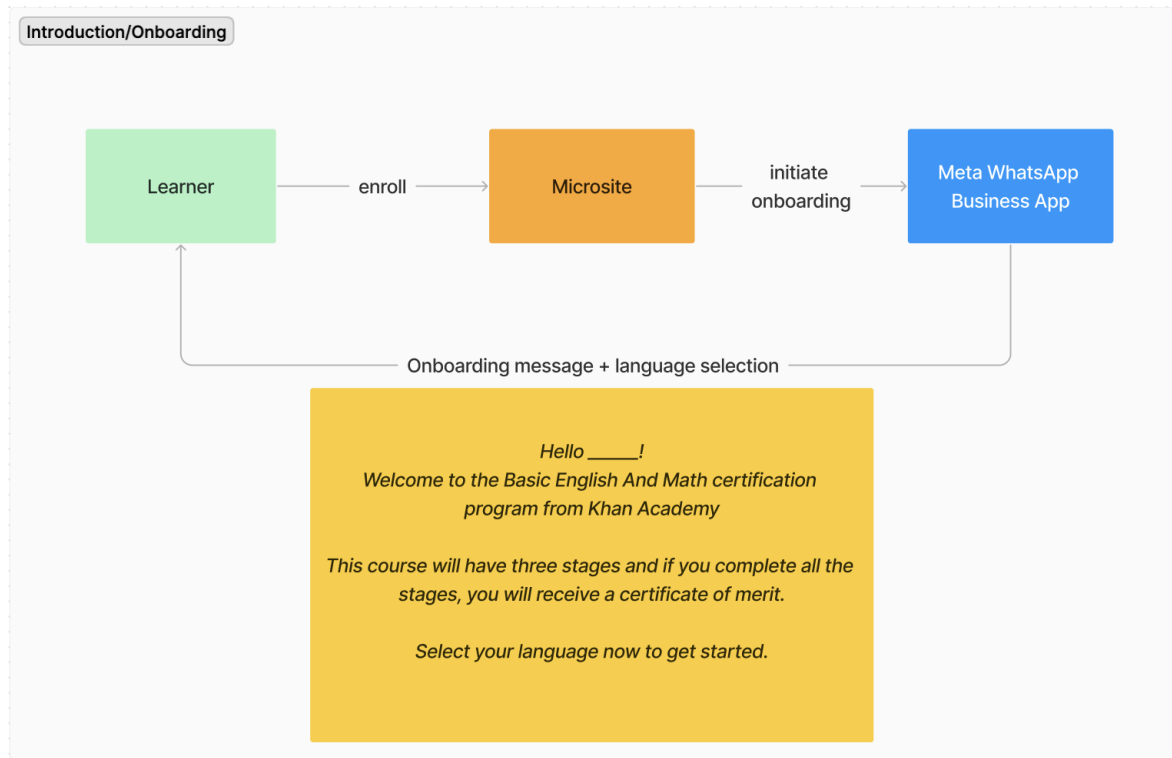The Communication Coach Bot uses the following
1. AWS EC2 instance
2. AWS RDS MySQL database server
3. Meta Developer application
4. WhatsApp developer account
5. Business WhatsApp Number
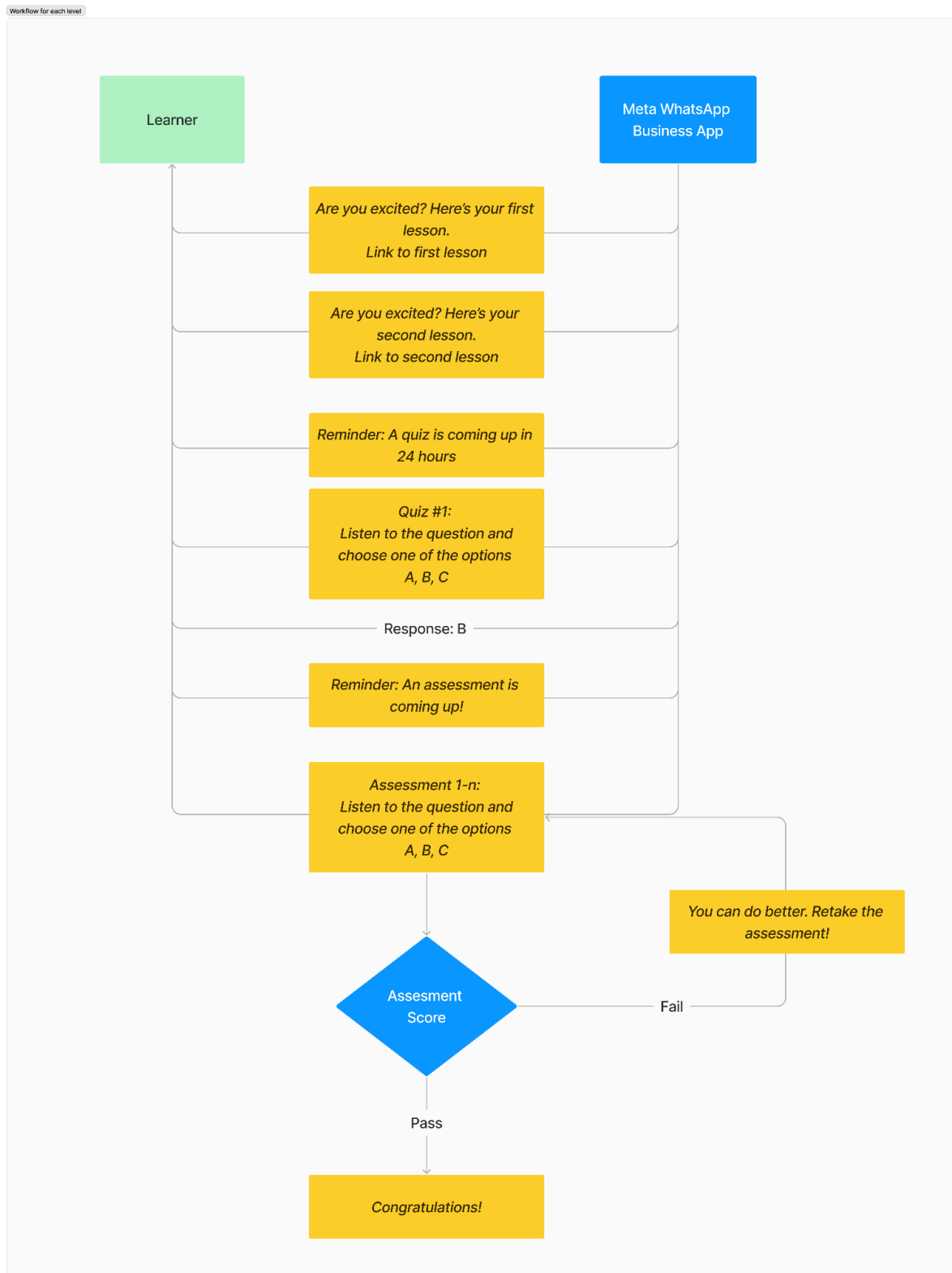
Example workflow

An example workflow that can be configured as follows
- Introductory welcome message
- For 4 weeks:
    - 2 video lessons per week
    - 1 reminder
    - 1 quiz for self-assessment
- 1 end-of-level assessment
- Earn badge/certification

Onboarding:

Weekly lessons workflow:

Workflow for each level

Learner

Meta WhatsApp Business App

Are you excited? Here's your first lesson.
Link to first lesson

Are you excited? Here's your second lesson.
Link to second lesson

Reminder: A quiz is coming up in 24 hours

Quiz #1:
Listen to the question and choose one of the options A, B, C

Response: B

Reminder: An assessment is coming up!

Assessment 1-n:
Listen to the question and choose one of the options A, B, C

You can do better. Retake the assessment!

Assessment Score

Fail

Pass

Congratulations!

Configuration of the Bot

This section helps you to set up the Communication Coach Bot server to deliver messages to your end users as per the business requirements. Client engagement teams can set up the workflow as per their engagement plan.

1. Set up the organization details by adding the organization on the server. Select **Organizations** in the side menu and click on the **+ New Organization** button to add a new organization.
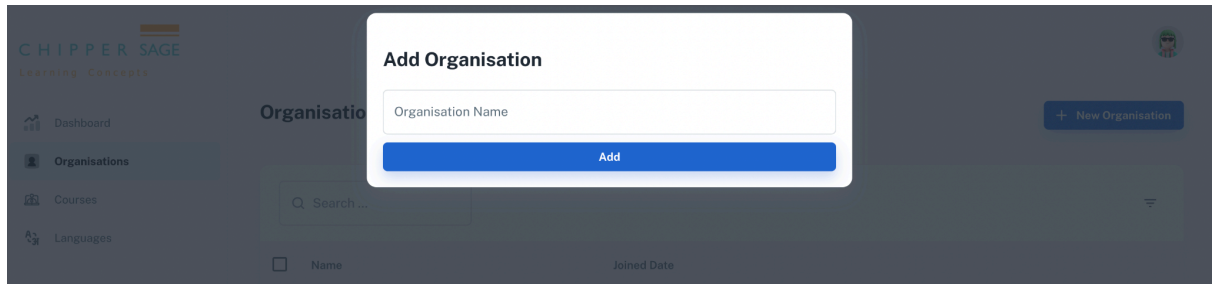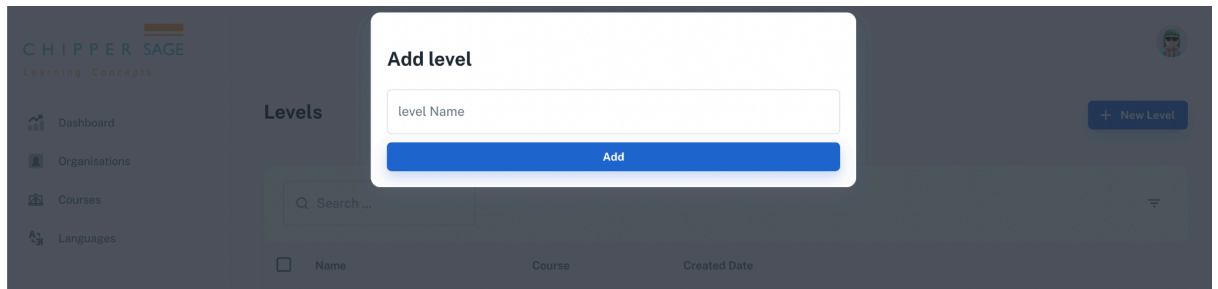
2. Each organization can have multiple **cohorts**. Set up a cohort for the organization and then proceed to enroll learners to be part of a **cohort**.

3. Add a communication workflow as a course. An organization can have multiple courses or workflows under it. Select **Courses** in the side menu and click on **+ New Course** to add a new course/workflow.
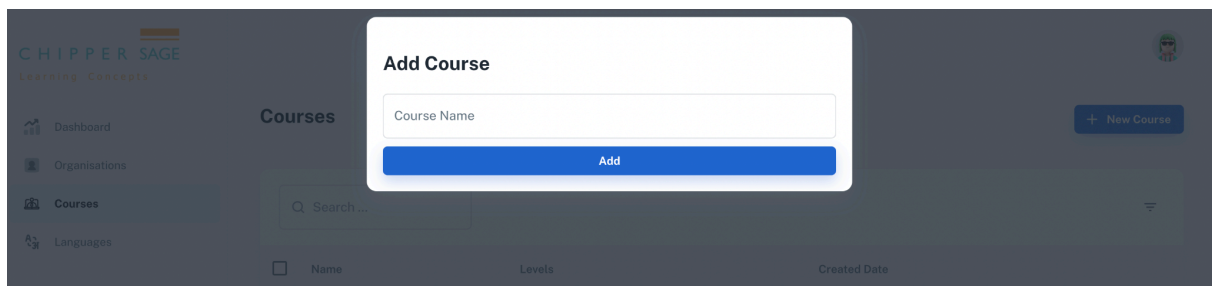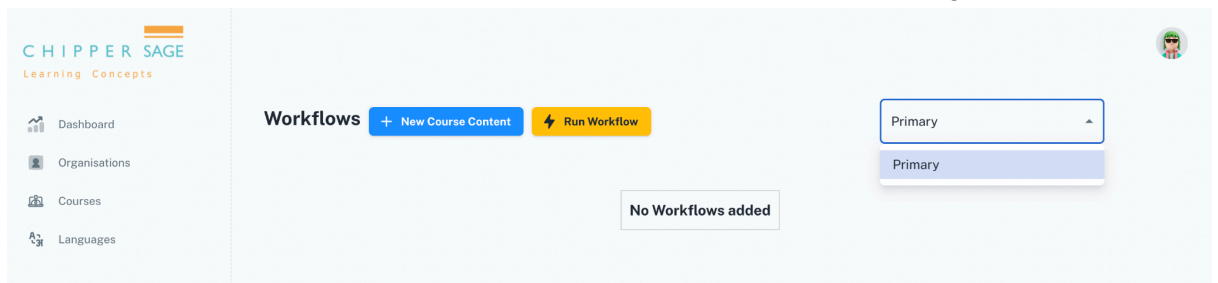
4. A course/workflow must contain atleast 1 level. Click on the 3-dot menu of the course and choose Levels to create a level.
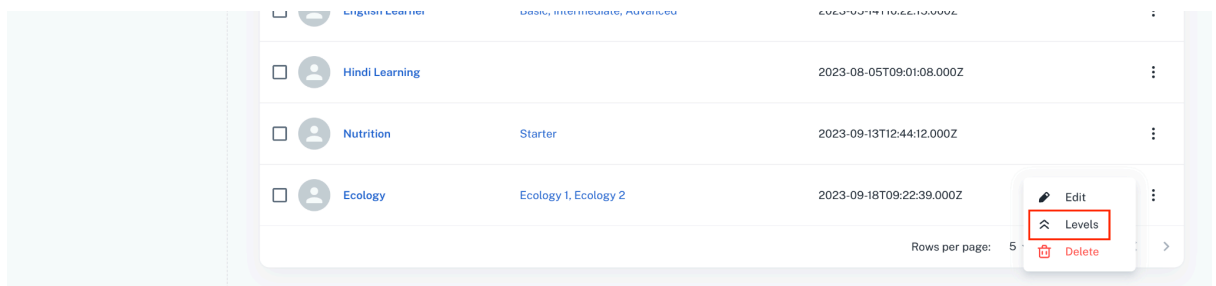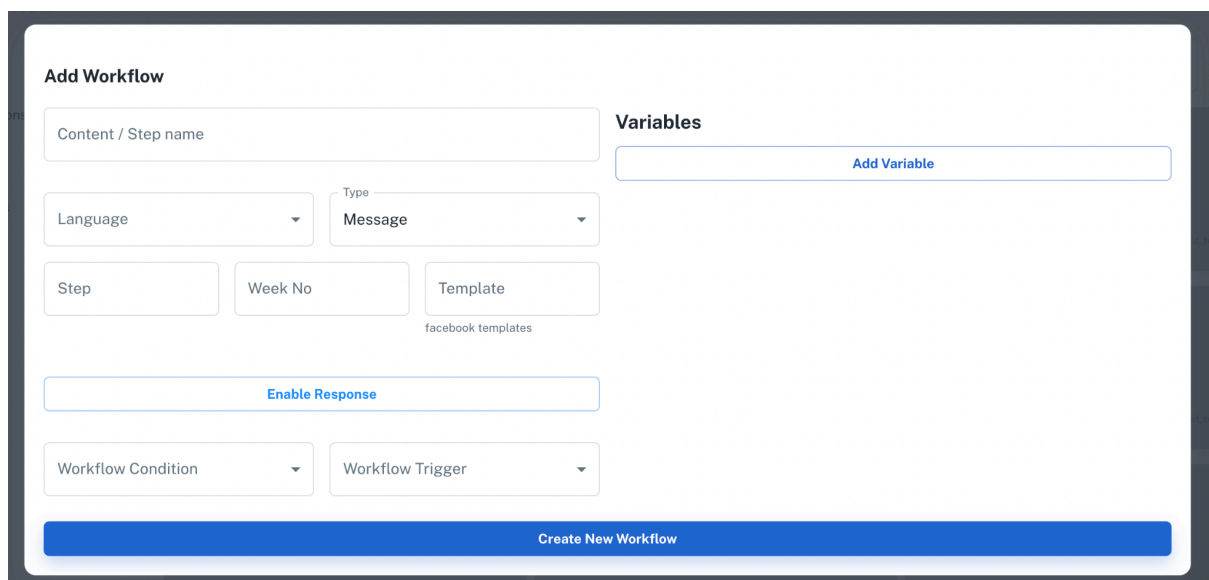
5. In the **Levels** screen, click on **+ New Level** to add a new level to the course/workflow.

6. To add the workflow for a course or level, click on the course in the Courses dashboard. Choose the appropriate level from the drop down in the top right corner.

7. Click on the **+ New Course Content** button to add a new step to the workflow. A workflow can consist of one or more steps depending on the engagement plan of the business.

8. To add a new workflow, click the **Create Workflow** button.

Use the Workflow Parameters below to fill out the form.

Workflow Parameters

Key	Value	Description
Language	English/Hindi/Kannada	Choose the language you are sharing the welcome message in.
Type	Message	The output of this type is a message with a fixed message as mentioned in the template. The message can take additional parameters as specified under the templates.
	Question	The output of this type is a question with embedded video in the header. You can provide options as parameter to this message type. Each option can be validated as the right or wrong answer. Based on the answer, the following workflow can be configured.
	Assessment	The output of this type is a question with embedded video in the header. You can provide options as parameters to this message this. The answers to the the questions are not validated until the workflow_condition is set to **assessment_validate.**
Step	A number	Choose a step number that identifies the order in which the item is to be invoked in the workflow.
Week	A number	Number used to track the week for which the messages are being sent.
Response	Enable	Enable the response and choose another workflow as a follow up workflow.
	Disable	Disable
Workflow_condition	NA	Not applicable for this workflow
	capture_language	Set this condition to provide the options to capture the language. *Only applicable to welcome_message template.*
	assessment_validate	This initiates the calculation of the

		total score in the assessment and validating against the success criteria.
	level_completed	This signals that the user has completed one level and user is moved to the next level.
	quiz_completed	This signals that the user has completed the quiz successfully. *This is applicable to the weekly_completion_template template.*
Workflow_trigger	NA	No trigger
	in_assessment	This signals that the user is taking up the assessment
Message Template Parameters	See [Message Templates](#) and [Message Template Parameters](#) below.	

Message Templates

The Communication Coach Bot supports the following types of message templates for configuring your workflow. :

1. welcome_message
2. daily_video_lesson
3. quiz_reminder_template
4. weekly_quiz_template
5. weekly_completion_template
6. level_assessment
7. level_completion_success

Message Template Parameters

Use the table below to define the parameters for each template type

Template	Parameters	Type	Explanation
welcome_message	User_name	Body	The name of the user that appears in the body of the message.
	Organization_name	Body	The name of the organization appears in the body of the message.
daily_video_lesson	User_name	Body	The name of the user that appears in the body of the

			message.
	Lesson_no	Body	A number to mention the ordinal number of the lesson in the message. Eg: 1st, 2nd
	User_lesson	Body	Relative path of the video; This is presented as a link to the learner.
	Call To Action	Button	Link to *User_lesson*
quiz_reminder_template	Quiz_remainder_duration	Body	Time left for the next quiz in days.
weekly_quiz_template	User_name	Body	The name of the user that appears in the body of the message.
	user_lesson_video	Header video	Path of the video that is part of the question; Video is embedded in the header of the message.
	Option n	Option	Text showing the option
	Score	Value	0 if it is wrong 1 if it is right
weekly_completion_template	Week_no	Body	The week which has been completed
	Week_plus_one_no	Body	The ordinal number of the next week
level_assessment	User_name	Body	The name of the user that appears in the body of the message.
	User_course	Body	The name of the course/workflow or level for which the assessment is given.
	user_lesson_video	Header Video	Http url of the question video
	Option n	Option	Text showing the option
	Score	Value	0 if it is wrong 1 if it is right

level_completion_success	User_name	Body	The name of the user that appears in the body of the message.
	User_certificate	Header Image	The path to the image of the certificate.
	User_course	Body	The name of the course/workflow or level for which the assessment is given.

Integrating with the Meta/WhatsApp API

To enable the Communication Coach Bot to send and receive WhatsApp messages, you need to integrate it with the Meta or WhatsApp Business developer APIs.

Meta allows you to create applications on its developer platform to send business WhatsApp messages. These messages can be either business-initiated or user-initiated. Separate charges are applicable for different message types.

The Communication Coach Bot uses the
1. **Sender API** to initiate the message from the server.
2. **Listener API** to capture the response from the learner's WhatsApp through a Meta webhook.

Before You Start

To interact with the APIs, you must first create a Meta Application. You can create one at https://business.facebook.com.

After creating the app, you must generate a WhatsApp account and generate a **User Access Token** with it. This token will allow you to manage permissions and objects you manage on this application. You should also configure a callback URL or a webhook.

If you are a business or organization with your own WhatsApp account, please create the message templates with the parameters as mentioned in Message Templates and Message Template Parameters.

Sender API

The Communication Coach Bot initiates several messages like the onboarding message, lessons, quizzes, reminders, level completion, certificate messages from the server to the learner's WhatsApp. Communication Coach Bot uses the following API to communicate with the WhatsApp server.

Request Headers:
```
        Authorization : WhatsApp Business API Token,
        Content-Type": "application/json
```

Post data:

```
data
{"messaging_product":"whatsapp",
"recipient_type":"individual",
"to":<recipient phone num>,
"type":"template",
"template":{
```

```
    "name":"<template>",
    "Language":{"code":"en"},
            "components":[{ "type":"body",
          "Parameters":[ <parameters>
                        ]
      }
}
```

Here is the list of variables you need to send in the JSON data.

Variable	Input
url	URL of the WhatsApp Developer API for your application registered with your server number.
Authorization	Token generated on the WhatsApp/Meta developer api platform for your application.
to	Mobile number of the learner/recipient which is registered with WhatsApp
name	One of the defined templates. See Message templates.
Parameters	Message Parameters according to the defined template.

Example:

```
curl -i -X POST \
 https://graph.facebook.com/v18.0/115918794809139/messages \
 -H 'Authorization: Bearer
EAAIvXZCUSQkgBOw9iZCxew61YqGwO1OdOcBQstyZAi43nZArZCsguEbcskAadoAaZA92KNwG78ce9qWlrL
5xszQMCuJR9QMUh61ATW8pHqMdsQXwq17sOocxOZAHNxEjgiZAzry7GrT3dcr7iPlE9vCpEZAflXWAdd7zn
ZCYndEfnIZBEbAqZBkfN6rR1xOZAM29qaufZB8ZA1lXLZAAqiqU3cJZAyykZD' \
 -H 'Content-Type: application/json' \
 -d '{ "messaging_product": "whatsapp", "to": "", "type": "template", "template": {
"name": "daily_video_lesson", "language": { "code": "en_US" }  "components":[{
"type":"body", "Parameters":[ {"type":"text", "text":"Santosh"},
{"type":"text","text":"1st"}]}, {"type":"button", "Sub_type":"url", "Index":0,
"parameters":[{"type":"text","text":"lesson1.html"}]}]}} }'
```

Listener API

In the case of quizzes and assignments, the learner responds to the questions with options. The Listener API listens to the data from the WhatsApp Webhook URL. This URL can be configured in the WhatsApp Developer API account.

The following is the example POST data from the Webhook url.

Example POST data :

```
{
  "object": "whatsapp_business_account",
  "entry": [
    {
      "id": "105651399178573",
      "changes": [
        {
          "value": {
            "messaging_product": "whatsapp",
            "metadata": {
              "display_phone_number": "XXXXXXXXXXXX",
              "phone_number_id": "XXXXXXXXXXXXXXX"
            },
            "contacts": [
              {
                "profile": {
                  "name": "LEARNER NAME"
                },
                "wa_id": "XXXXXXXXXXXX"
              }
            ],
            "messages": [
              {
                "context": {
                  "from": "XXXXXXXXXXXX",
                  "id":
"wamid.HBgMOTE5MzgwNzI2OTc1FQIAERgSNzRFNzkxMTgwMDc2Q0I1NERGAA=="
                },
                "from": {
                  "name": "LEARNER NAME",
                  "phone": "XXXXXXXXXXXX"
                },
                "id":
"wamid.HBgMOTE5MzgwNzI2OTc1FQIAEhgSODE0MjcwQTAzNzU2QTMzOUI0AA==",
                "timestamp": "1710827919",
```

```
          "type": "quick_reply_message",
          "button": {
            "payload": "A",
            "text": "A"
          }
        }
      ]
    },
    "field": "messages"
  }
 ]
 }
 ]
}
```

The following parameters can be obtained from the response for further processing and to be used in the workflow defined in the Communication Coach Bot.

Variable	Data
display_phone_number	WhatsApp phone number registered for business and configured in the WhatsApp application.
phone_number_id	Identifier of the display_phone_number
name	Learner's name
wa_id	Learner's phone number
type	Workflow condition - type such as in_assessment, quick_reply_message, etc
payload	Response based on button clicked
text	Text of the response

Start and Monitor Server

Use the following commands to start and monitor the server.

Command	Action
pm2 start 0	Start the server
pm2 restart	Restart the server
pm2 logs	Check the logs of the app
pm2 monit	Monitor the app

Glossary

Term	What it means
Communication Coach Bot	Micro-learning content delivery platform
BEAM	Basic English and Math program from Khan Academy
Workflow	A sequence of steps that defines the order of delivery of messages over WhatsApp.
Workflow Parameters	Parameters to define the workflow according to the message template used.
Message Template	Templates defined on the WhatsApp Business account
Message Template Parameters	Parameters specific to each template