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Social inclusion and common values: the contribution in the field of education and training

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D1.1. INCLUDEME Stakeholder Requirements

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CONTENTS

CONTENTS	3
EXECUTIVE SUMMARY	5
1. INTRODUCTION	6
1.1 ROLE OF THIS DELIVERABLE IN THE PROJECT	6
1.2 APPROACH	6
1.3 STRUCTURE OF THE DOCUMENT	6
2. RESEARCH METHODOLOGY	7
2.1. ONLINE SURVEY QUESTIONNAIRE	7
2.2. SEMI-STRUCTURED INTERVIEWS	9
3. ANALYSIS OF THE QUESTIONNAIRE AND SEMI-STRUCTURED INTERVIEWS.....	11
3.1 PURPOSE.....	11
3.2 ANALYSIS OF THE ONLINE SURVEY	11
3.3 ANALYSIS OF THE SEMI-STRUCTURED INTERVIEWS.....	22
3.3.1 <i>Individual Interviews</i>	22
3.3.2 <i>Comparison of differences between stakeholders based on semi-structured interviews</i>	27
4. REQUIREMENTS	31
5. CONCLUSIONS	38
6. REFERENCES	39

LIST OF FIGURES

Figure 1. Multimethodology research approach for data collection	7
Figure 2. For how many years have you been teaching?	11
Figure 3. Have you taught any students with special needs?	12
Figure 4. If yes, which of the groups? (The target group of INCLUDEME)	12
Figure 5. Do you have employees or students with special needs?	13
Figure 6. If yes, which of the groups? (The target group of INCLUDEME)	14
Figure 7. What prevent disadvantaged learners for engaging?	14
Figure 8. What kind of learning resources would be most suitable for engaging disadvantaged learners?	15
Figure 9. What learning technologies / resources are available in school that students have experience using?	16
Figure 10. What difficulties do you face in using those learning technologies?	17
Figure 11. Which possibilities do you have to adapt all the learning technologies (including serious games) for different needs of the INCLUDEME target groups?	17

Figure 12. Keeping assistive and learning technologies in mind, what do you expect from INCLUDEME project (support materials)?	18
Figure 13. What are the main issues related to disabled students and the use of IT in school?	19
Figure 14. Do you always have enough sources to prepare quality content for the class?	19
Figure 15. As a teacher, do you have any specific needs that we need to consider when designing the INCLUDEME platform?	20
Figure 16. How do you assess your students' progress?	21
Figure 17. Which disabilities should the INCLUDEME Project provide support for?	22
Figure 18. Factors which prevent the engagement of disadvantaged learners	27
Figure 19. Resources to engage disadvantaged learners	28
Figure 20. INCLUDEME support material.....	28
Figure 21. Needs to be considered while designing INCLUDEME Platform.....	29
Figure 22. Assessment recommendations in INCLUDEME Platform	29

LIST OF TABLES

Table 1. An Overview of all Needs	31
Table 2. An Overview of Requirements	35

EXECUTIVE SUMMARY

The main objective of D1.1 is to capture and analyse the different needs and requirements from the stakeholder groups. The analysis will consider the needs of the teachers among the consortium and external organisations. The analysis will reflect not only the dimensions of educational environments, but also the intertwining of social and educational contexts, key gaps and barriers (e.g. engagement of the disabled and disadvantaged learners) that affect the adoption of the INCLUDEME solution.

This deliverable is the first of two on user requirements and gives a first indication of what the users imagine they need. In addition, this deliverable will be updated later.

The results presented in this deliverable are based on the contribution of seven different participants within the consortium and two participants from external organisations. The results were collected until the middle of June. The stakeholders' group has identified autism spectrum followed by dyslexia and cognitive impairment as the most relevant in term of disabilities, while most important social disadvantages include low confidence among parents and their children on the use of the modern technology, lack of awareness of formal education and cost of technology. A second interesting result is the accessibility of the INCLUDEME platform, which will offer the opportunity to adapt learning material provided via the platform. In this perspective, there is a need to put accessibility at the forefront; the platform should provide accessibility options e.g. text to speech options etc., the platform should be easy to use and easy to understand. There is also a need to provide accessibility resources to the disabled students.

The document starts with a short introduction to the objectives and scope of the project. Following this, the research methodology used is presented and discussed with the most relevant results and requirements from the stakeholders' group. The deliverable concludes with the main findings and the key points for the ongoing development tasks.

1. INTRODUCTION

The general objective of the INCLUDEME project is to nurture and implement inclusive education practices across educational, economic, social, and cultural contexts. This will be achieved by firstly infusing digital innovation in customizable, user-centred learning environments. Secondly, by employing the capabilities and facilities provided through accessible information technologies and gaming approaches, and thus construct novel approached and experiences that engage, motivate and increase the performance of disadvantaged and disabled learners. The project advocates for an informed society, aiming to leverage access to information and knowledge, in order to support the initiation and consolidation of common inclusion values.

1.1 Role of this Deliverable in the Project

This deliverable is the first of two in WP1 of the INCLUDEME project. This will serve as input for WP3 Platform & Accessibility tools within the project.

1.2 Approach

The online survey questionnaire was distributed among the consortium having seven project partners in countries including Romania, Greece, Germany, Bulgaria, Ireland and Cyprus. After the online survey, semi-structured interviews were carried out in order to gather more detailed information on the questions asked. The semi-structured interview allowed the collection of in depth open-ended data, to explore participant thoughts about the subject under question [1]. The duration of the interview was 45mins with each participant. It was planned to conduct 2x interviews from each partner organisation in the time span of two weeks.

1.3 Structure of the document

This document is divided into four main chapters. Chapter 1 provides an overview of the objectives, the role of this deliverable in the project, and the approach taken to capture the needs and requirements from the relevant stakeholders. Chapter 2 describes the research methodology that was followed to collect the needs and requirements from the stakeholders group. In Chapter 3, the results from the teachers' online survey and semi-structured interviews are depicted and the analysis presented. Chapter 4 summarizes the key needs and requirements of stakeholders and draws conclusions from the data.

2. RESEARCH METHODOLOGY

Due to the pandemic situation, it was not easy to carry out this task of gathering the needs and requirements from the stakeholder group; everything had to be done online in an efficient manner in minimal time due to time constraints of this T1.1 in WP1. To accomplish this task, we used multimethodology or multimethod research design which includes the use of more than one method of data collection. The term “sequential” here means that data is collected by multiple methods which occur in series to each other [2]. Therefore, the traditional twostep approach was followed. In the first step, an online survey was distributed while in the second step semi-structured Interviews were conducted. The research method is explained by the figure 1 as follows.

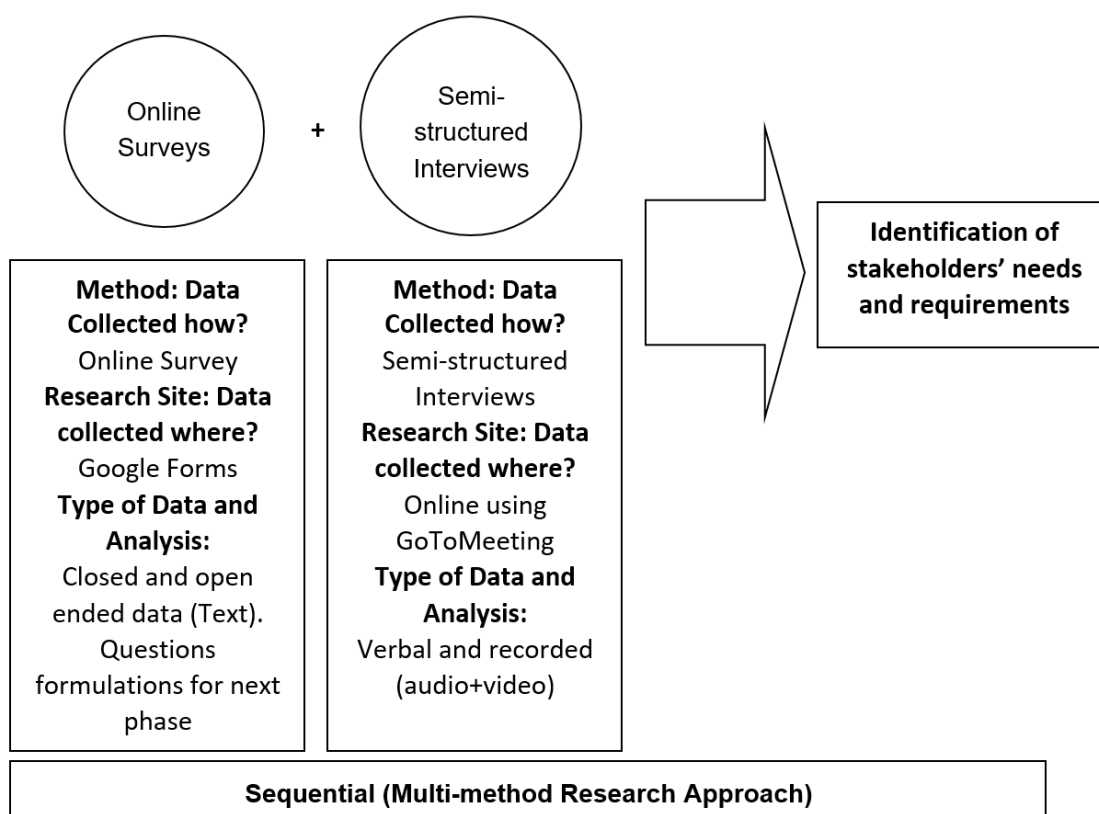


Figure 1. Multimethodology research approach for data collection

2.1. Online Survey Questionnaire

Initially, we used an online survey questionnaire to get the overview of the needs and the requirements of the teachers in the context of teaching disadvantaged students, especially disabled ones. Another purpose of the online survey was to prepare the questions for the next step i.e. Semi-structured interviews. The survey questionnaire was formed on Google forms and it was initially distributed to the consortium members involved in the requirements. The response was collected from them on Google forms. Within the consortium, only five participants managed to respond to the survey and having only five teachers in the stakeholders' requirement analysis was not enough.

Therefore, to get the broader spectrum of needs and requirements in the analysis, consortium members also tried to distribute the survey questionnaire to the external organisations which will be involved in piloting in the next WPs. Therefore, apart from five persons within the consortium, we also received responses from two participants from external organisations. Overall, seven persons responded to the online survey. Within the consortium, we got no questionnaire response from two partner organisations (Partner-4 named Panepistimio Thessalias and Partner-7 named Asociatia cultural-educativa Ambasadorii prieteniei). This online survey had 17 questions (nine closed and eight open ended questions) relating to the disabled and disadvantaged learners. It covered the types of social exclusions which the participants were dealing with or had dealt with in the past. Some questions were related to the learning technologies being used to teach their students. It covered the issues related to the use of ICT. It was covered the needs as well as expectations of the stakeholders in terms of INCLUDEME support material and the INCLUDEME platform. To formulate these questions, we started from pre-formulated requirements in the project proposal and the Teachers' questionnaire in the BEACONING project (since it already had the analysis requirements from teachers). Looking into the detailed results from there, we found some interesting but missing facts that needed to be investigated relating to the disadvantaged and disabled students, which in turn helped to make a new and more specific online survey questionnaire. In addition, these questions were formulated carefully while looking into the proposal's promises. The main aim of T1.1 in WP1 is to analyse the needs of teachers that work with disadvantaged and disabled learners. In the project proposal, it was promised that the analysis will reflect the key gaps and barriers (e.g. engagement of the disabled and disadvantaged learners) that can affect the adoption of the INCLUDEME solution. This task will provide insights into the expectations of the target groups concerning supporting technologies, with the purpose of identifying expectations of technology and factors that prevent potential users from using the INCLUDEME platform and its learning resources, e.g. lack of information; limited attention span; lack of motivation; lack of experience; inadequate technologies; lack of basic knowledge and skills and the need of personalised adaptations. In reference to accomplish the promised outcomes of this task, the complete questionnaire is depicted as follows:

1. Organization and Name:
2. How many years of teaching (x<5, 6-10, more than 10)
3. Have you taught any students with special needs (yes, no, don't know)
4. If yes, which of the groups (the target group of INCLUDEME)- yes, no, don't know – as answers
 - Blindness / visual Impairment
 - Hearing Impairment
 - Locomotors Disability
 - Mental Illness
 - Speech and Language Disability
 - Other Physical disabilities
 - Cognitive impairment/learning disability
 - Dyslexia
 - Autism
5. Do you have employees or students with special needs (yes, no, don't know)
6. If yes, which of the groups (the target group of INCLUDEME)- yes, no, don't know – as answers
 - Blindness / visual Impairment
 - Hearing Impairment

- Locomotors Disability
 - Mental Illness
 - Speech and Language Disability
 - Other Physical disabilities
 - Cognitive impairment/learning disability
 - Dyslexia
 - Autism
7. What prevent disadvantage learners for engaging- costs of technologies, access at home, awareness of the relevance of formal education, lack of role models/lack of perspective
 8. What kind of learning resources would be most suitable for engaging disadvantage learners: Games, Gamified lessons paths, other learning resources
 9. What learning technologies resources are available in school that students have experience using?
 10. What difficulties do you face in using those learning technologies?
 11. Which possibilities do you have to adapt all the learning technologies (including serious games) for different needs of the INCLUDEME target groups?
 12. Keeping assistive and learning technologies in mind, what do you expect from INCLUDEME project (support materials)?
 13. What are the main issues related to disabled students and the use of IT in school?
 14. Do you always have enough sources to prepare quality content for the class?
 15. As a teacher, do you have any specific needs that we need to consider when designing the INCLUDEME platform?
 16. How do you assess your students' progress?
 17. Which disabilities should the INCLUDEME Project provide support for?

2.2. Semi-structured Interviews

Conducted conversationally with one respondent at a time, the semi-structured interview employs a blend of closed- and open-ended questions, often accompanied by follow-up why or how questions. The key characteristics of the semi-structured interviews are as follows [1, 3]:

- Loose, flexible structure
- Iterative
- Groups or individual participants
- Scheduled in advance
- Insights into the participants perspective
- Deep exploration of participants thoughts and experiences

Therefore, to get more in-depth knowledge about the online survey questionnaires, the semi-structured interviews were carried out. The interviews were undertaken using the GoToMeeting platform. The audio and video were recorded during the interview by taking permission from the teacher. Looking into the responses from the online survey, we found a pattern of questions to be asked during the interviews. The questions were related to their experiences of dealing students with special needs, the factors which prevent engagement of disadvantaged learners, expectations from the INCLUDEME platform and project support material. We conducted nine interviews in total with nine persons (only one interview session of 45minutes with each person). The seven persons who contributed to the online survey also took part in the interviews. Apart from those seven, we also

conducted two interviews with two other persons within the consortium, one was from Partner-7 and the other was a teacher from Partner-5 (these two participants did not fill in the online survey). As these persons did not fill in the online survey, we asked for the same detailed information which we asked from other participants in order to avoid complexities in the interview analysis later on.

3. ANALYSIS OF THE QUESTIONNAIRE AND SEMI-STRUCTURED INTERVIEWS

3.1 Purpose

The purpose of this document is to give a detailed analysis of the teachers' needs and requirements in the perspective of INCLUDEME support material and platform design. In the following sections, we have done the analysis of online surveys and the interviews. Based on both analysis, stakeholders' needs will be collected and then requirements will be developed in the next chapter.

3.2 Analysis of the online survey

As described before, the online survey collected general information from the relevant consortium members. The main intention of this survey was to get an overview of the current situation in readiness for the pilot phase, discovering communalities and differences among those partners in order to prepare for the deeper interviews. The analysis of the online survey results presented in this sub-chapter is therefore a synthesis of all seven completed questionnaires. The results and the analysis of the online survey is presented below.

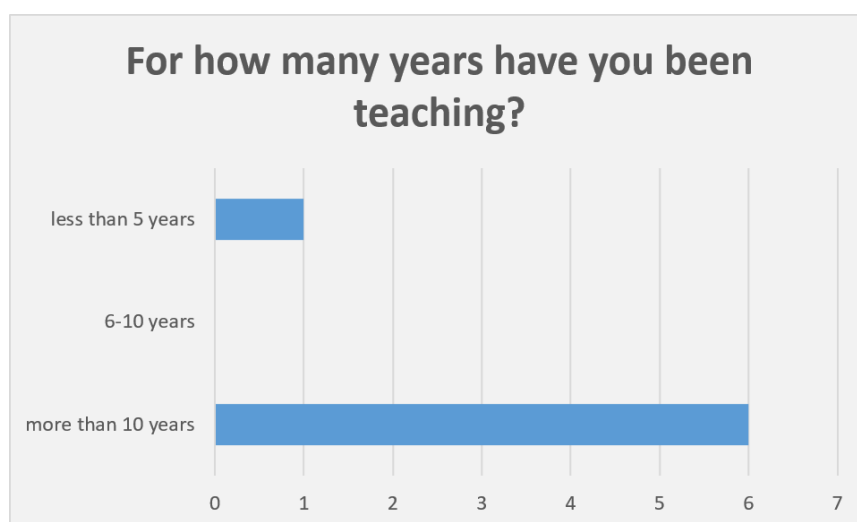


Figure 2. For how many years have you been teaching?

Figure 2 indicates that 85.7% participants have experience of more than 10 years of teaching while only 14.3% have teaching experience less than 5 years. There are no teachers among participants having teaching experience between 6 to 10 years. It can be said that we got more responses from the experienced stakeholders and it is better in order to get comprehensive information regarding the students with special needs. Among these stakeholders a couple of them are assistive technology trainers for students with special needs. Stakeholders also have experience in teaching adults with disabilities.

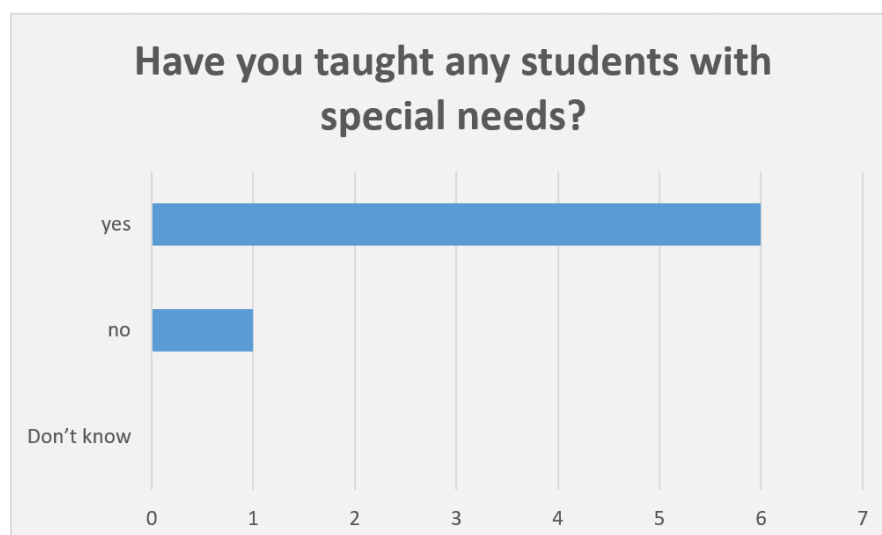


Figure 3. Have you taught any students with special needs?

Figure 3 tells us that the most of the teachers have taught students with disabilities and disadvantaged students. 85.7% teachers have experience of teaching students with special needs while one among them is not aware of teaching students with special needs. 57.1% teachers have indicated Autism as the common neurodiversity or impairment among their students, which is evident by Figure 4. 28.5% teachers mentioned Dyslexia and Cognitive impairment/learning disability as the second most common social exclusion among their disabled/disadvantaged group of students. 28.5% quoted ADHD, Mental Illness and Blindness/Visual impairment. While the remaining 14.3% teachers indicated hearing impairment, locomotor disability, speech and language disability and other physical disabilities (which they did not mention clearly in their comments) as the least occurring disability among their students.

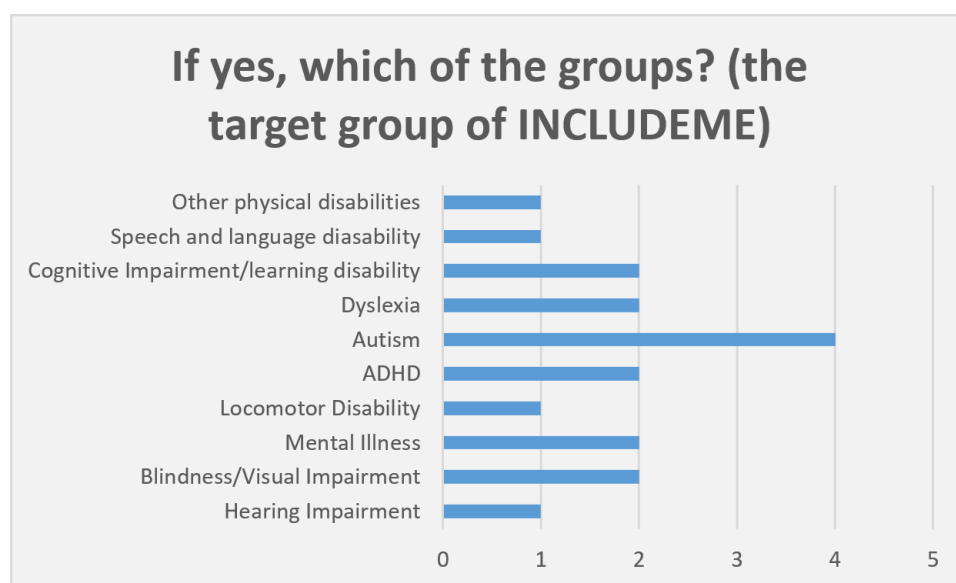


Figure 4. If yes, which of the groups? (The target group of INCLUDEME)

Figure 5 explains the response of the question, which asked about the current scenario of teaching students with special needs. It was asked whether they currently have some employees or students

with disabilities in their respective organizations. In order to answer this question, 71.4% teachers agreed that they have special need students and employees with them and explain about the facilities and support their organization provide to employees in terms of flexibility in working and support mechanism. In contrast, we got negative response from 14.3% stakeholders while the remaining 14.3% teachers did not answer this question.

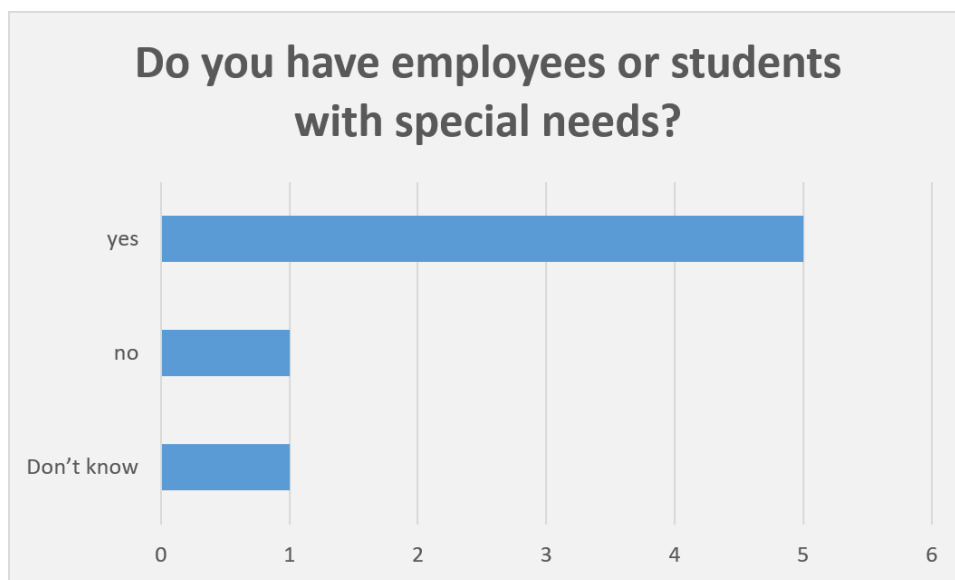


Figure 5. Do you have employees or students with special needs?

Then it was asked about the most common disabilities among their students / employees. 57.1% responses showed Autism as the common disorder among their groups which is depicted in Figure 6. Like previous answers, 28.6% teachers responded that mental illness, ADHD, Dyslexia, cognitive impairment, speech and language disabilities were the second most occurring social exclusion among their employees and students. 28.6% did not answer this question. Based on these outputs, the target groups of the INCLUDEME can be defined. It is obvious that neurodiversity which covers cognitive impairment, autism, ADH, dyslexia, aspergers should be the target groups as per the responses from the teachers as stakeholders.

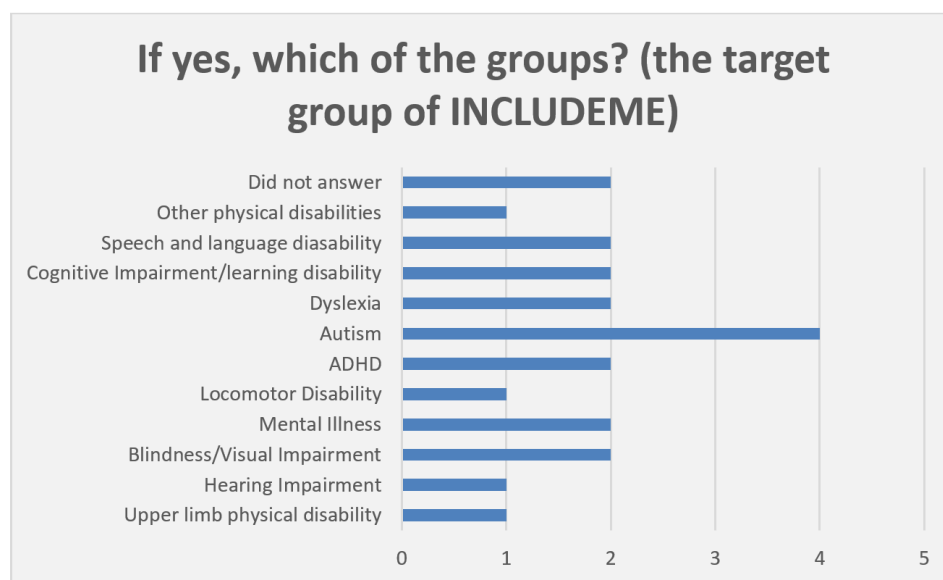


Figure 6. If yes, which of the groups? (The target group of INCLUDEME)

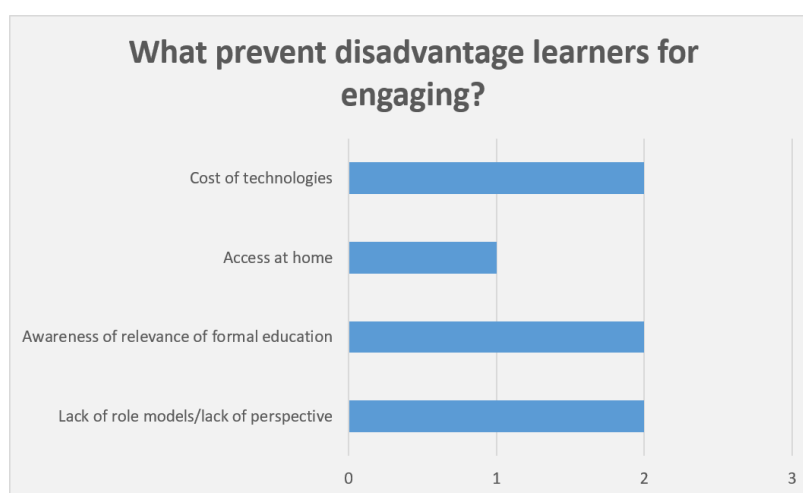


Figure 7. What prevent disadvantage learners for engaging?

Figure 7 depicts the factors which prevent the engagement of disadvantaged learners. We got mixed reviews from the teachers showing that all options seem to be equally important.

From the surveys, we deduced that there is a need to focus on increasing awareness of the formal education. Confidence plays a key role here. Confidence should be increased among teachers and parents in order to know how the use modern technologies to effectively teach disadvantaged students and those with disabilities. It is also necessary to create dedicated spaces in the learning environments that allow them to use the technology without restraints. There is a requirement to reduce the lack of accessibility at home; as parents do not have a proper knowledge of the importance of modern, interactive methods for learning which prevent disadvantaged groups to engage themselves. Even those in privileged educational areas, financial and budget issues are the reasons people cannot afford to have advanced technical interactive gadgets for learning. Therefore, there is also a strong demand to address the lack of availability of tools and technologies at institute

level. If there could be proper and effective availability of such technological tools in class, that could provide equal opportunities to disabled, disadvantaged and able-bodied children for learning. In the end, we found out that there was a lack of communication between disadvantaged students and teachers, as teachers are not fully knowledgeable about the disabilities, which prevents the engagement of students in learning. There is therefore a need to overcome this communication gap between teachers and their students.



Figure 8. What kind of learning resources would be most suitable for engaging disadvantaged learners?

Figure 8 depicts 85.7% teachers mentioned that gamified lesson paths are effective learning resources to engage disadvantaged students. This is because learning through the element of game playing is always interesting and encouraging as it captures the attention of the learners. 14.3% participants chose the option of games as the suitable kind of learning resources for engaging the special need students; it is evident in Figure 8. It can be interpreted easily that teaching students with the help of games methodology makes the lessons more entertaining for them and they can learn by playing games. There was no positive response from the teachers with the option of other learning resources.

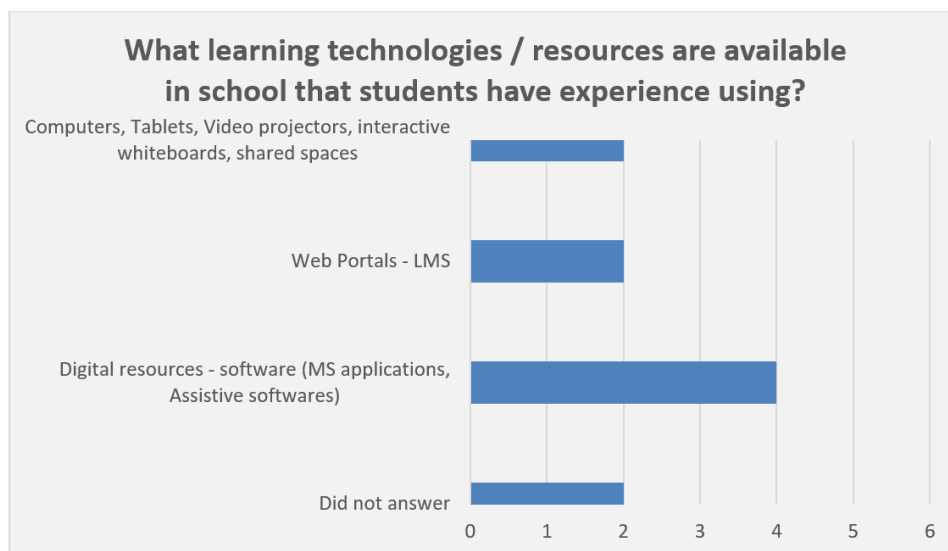


Figure 9. What learning technologies / resources are available in school that students have experience using?

Figure 9 explains the response in reference to the question in which it was inquired about the available learning technologies and resources in their schools, which their students have experience using. 57.1% participants mentioned about the digital resources present in their organizations. They mentioned that they train on assistive technology and software for use in higher education or the workplace. However, in their experience for Higher Education assistive software such as WordWorld, Puzzles, Dragon Speech Recognition, software for language and dyslexia such as ClaroRead and TextHelp, mind mapping software for planning and organization are used; Microsoft Office accessibility features and university-based intranet are also available to them. They also talked about learning games (CyberSee), stories and applications. Also, the use of videos and visuals for special need students is prevalent. They minimize the writing part and do exercises that are more practical in order to minimize the theory part. Apart from this, 28.6% teachers also commented about using the web portals, which includes learning management systems (LMS, Prolabview, Answergarden, and Moodle etc.), Collaboration platforms (MS Teams). In the end, 28.6% mentioned hardware resources available to them, which include interactive whiteboards, shared spaces, computers, tablet and video projector etc.

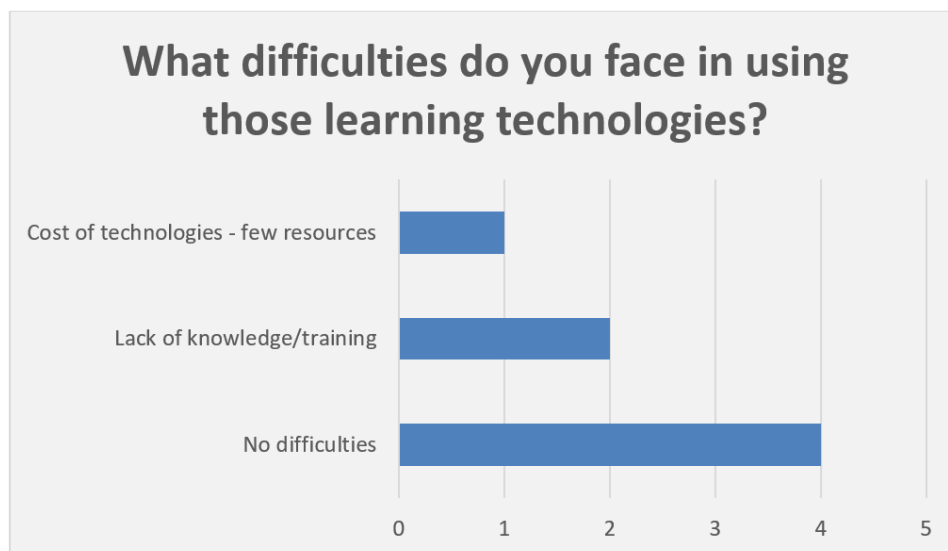


Figure 10. What difficulties do you face in using those learning technologies?

Figure 10 shows the response in reference to the question asked from the teachers, which was related to the difficulties they face using their available learning resources / technologies. 28.6% participants commented that lack of knowledge and lack of training to use the technologies is a big challenge for them. For example, one participant mentioned that lack of training on how to effectively use learning resources and teach others to use them properly. Lack of knowledge about specification of PCs to run the software effectively (especially visual impairment software such as Zoom Text or Dolphin Supernova) is also an issue for them. 14.3% teachers also quoted the cost of technologies, few electronic devices available, lack of interactive white boards and inappropriate learning spaces are main challenges which they face and consider as a difficulty in using their available learning technologies / resources.

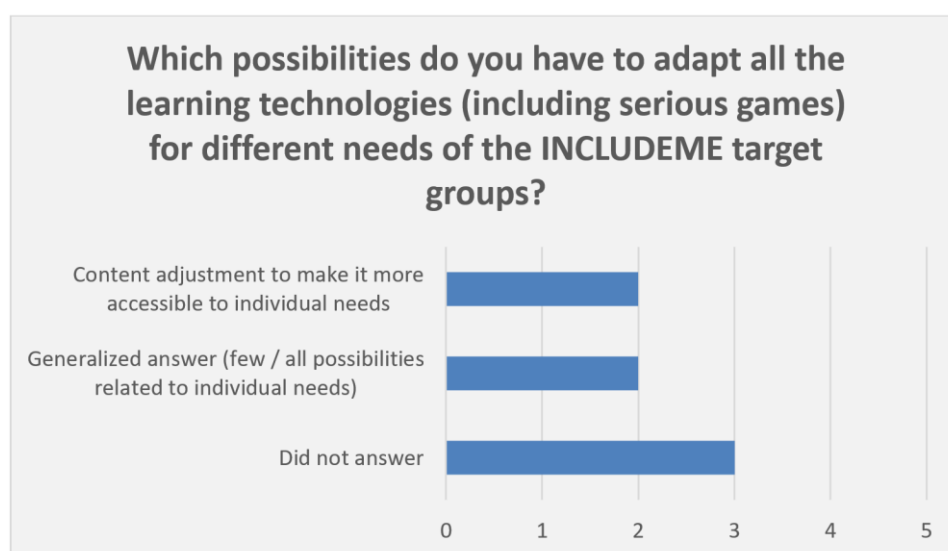


Figure 11. Which possibilities do you have to adapt all the learning technologies (including serious games) for different needs of the INCLUDEME target groups?

Figure 11 depicts the responses of stakeholders in reference to the possibilities to adapt the learning technologies for different needs of INCLUDEME target groups. 28.6% teachers commented that the assistive software they train on have many features to adapt to individual needs. e.g., font sizing, colour, spacing, screen masking, reading rulers, text to speech voices, speech recognition settings. They said that the capacity to adapt the learning technologies may not be possible, but adopting new technologies (to meet specific needs) or adapting/adjusting the content to make it more accessible are definitely plausible options. Another 28.6% participants gave generalized answers in which they said that they have all the possibilities that suit disadvantaged children needs and potential. Among these, 14.3% participants mentioned they had 'few' possibilities to adapt learning technologies to individual needs. This could be interpreted that they do not have many options at all or are unaware of them. 42.9% participants were unable to answer this question.

The participants were asked about their expectations from the INCLUDEME project, keeping in mind the assistive and learning technologies. The general answer was that it mainly depends on the type of targeted disability. The 28.6% mentioned that there should be learning software which include games (pool of games covering different subjects), online/web application and mobile applications should be developed to assist the special need learners. Some participants commented that there should be a support desk (a ticketing system would help to track progress and chat boxes on the platform etc.) available all the time to assist the learners. Another 28.6% teachers also said that there should be accessible documentation (which should not be too long or as interest and ability to read them can diminish) for all the students and especially visual tutorials to teach them so that they could easily learn and achieve their learning goals as depicted in the Figure 12. The 28.6% participants did not answer to this question.

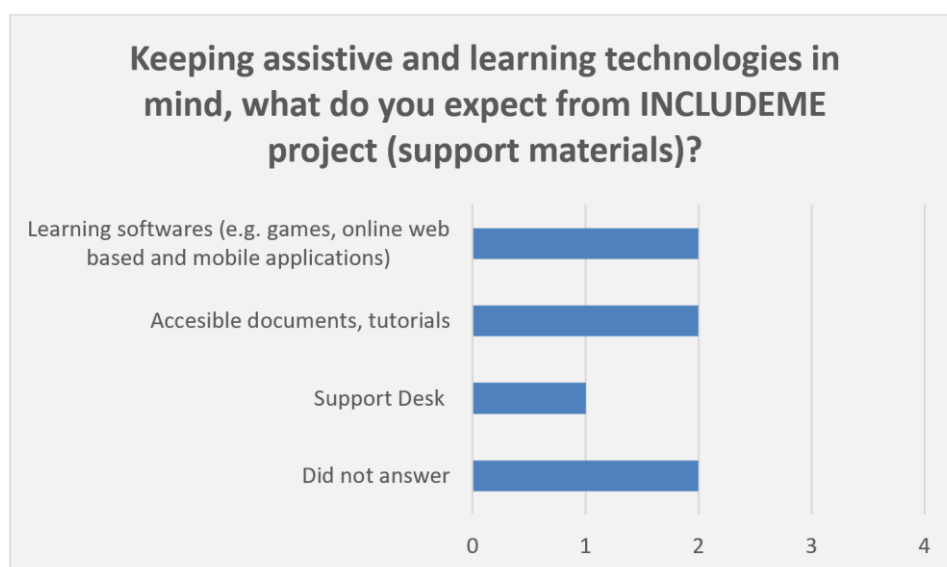


Figure 12. Keeping assistive and learning technologies in mind, what do you expect from INCLUDEME project (support materials)?

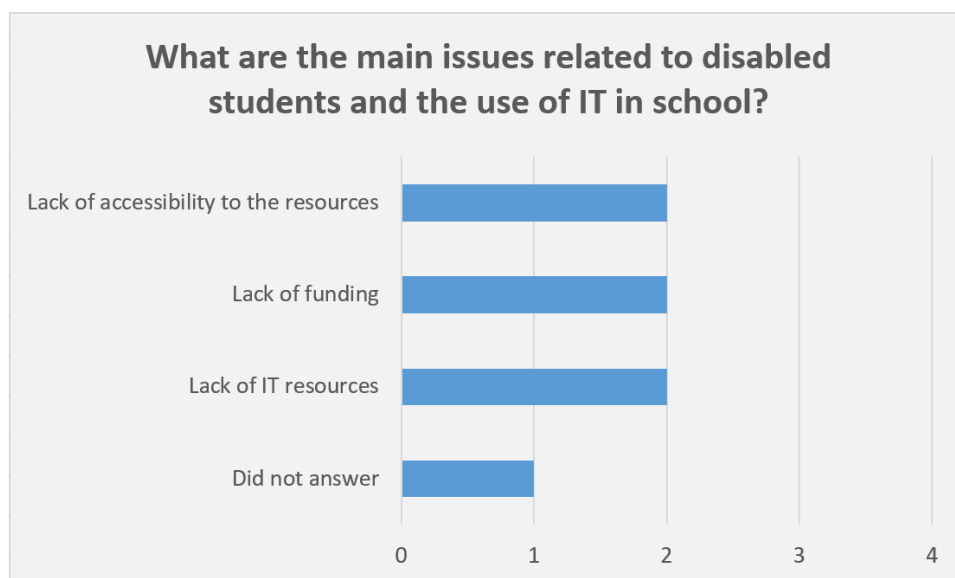


Figure 13. What are the main issues related to disabled students and the use of IT in school?

Figure 13 explains the main issues related to the use of IT in schools. Most of the teachers highlighted that there is a lack of IT resources (poor quality of computer hardware, internet connectivity problems and audio issues on the devices used by special need learners) in their schools, which makes it difficult for them to teach their students using the IT facilities. The adaptation of learning-based activities for those with disabilities is a challenge and funding of equipment and software is a main hurdle for the use of IT in their schools. Other issues include; not all information/content is accessible. Therefore, disabled students access a smaller portion of the learning content, hence they can only contribute to a fraction of the learning experiences, including collaborating or contributing to learning tasks. Restricted access due to low number of devices and underdeveloped digital skills is another issue in the use of IT. In short, there are many issues related to the use of IT in schools as per the comments from participants.

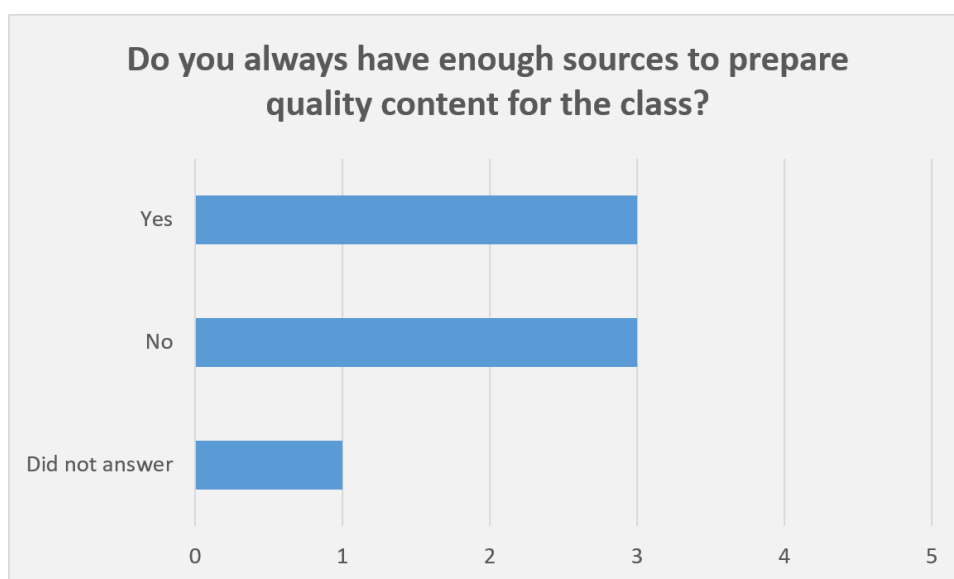


Figure 14. Do you always have enough sources to prepare quality content for the class?

The next question asked was about the availability of resources to prepare the quality content for the class of students. The results are given in Figure 14. The 42.9% teachers gave positive answer to this query. They said that resources are available to them but extra time is required to adapt the content to make it accessible and to support teachers in the class. In addition, 42.9% participants replied with negative answer to this question which means there is a lack of appropriate resources in order to develop easy and understandable learning content for their students.

Figure 15 depicts feedback for design guidelines of the INCLUDEME platform. The 71.4% teachers indicated that the platform needs to be user friendly and interactive to gain attention of the player and to keep motivation to play it. UI should be intuitive and communicate necessary information clearly and precisely with the use of appropriate colors and fonts. UI should be clear to the player. Participants mainly mentioned Buttons are a vital element in creating a smooth flow in the game. Another helpful remark was adding animations and special visual effects to highlight important events in the game. Animations need to be effective to support UI functionalities. Inclusiveness of all possible languages play an important role as most of the students are familiar to play comfortably and confidently in their own language.

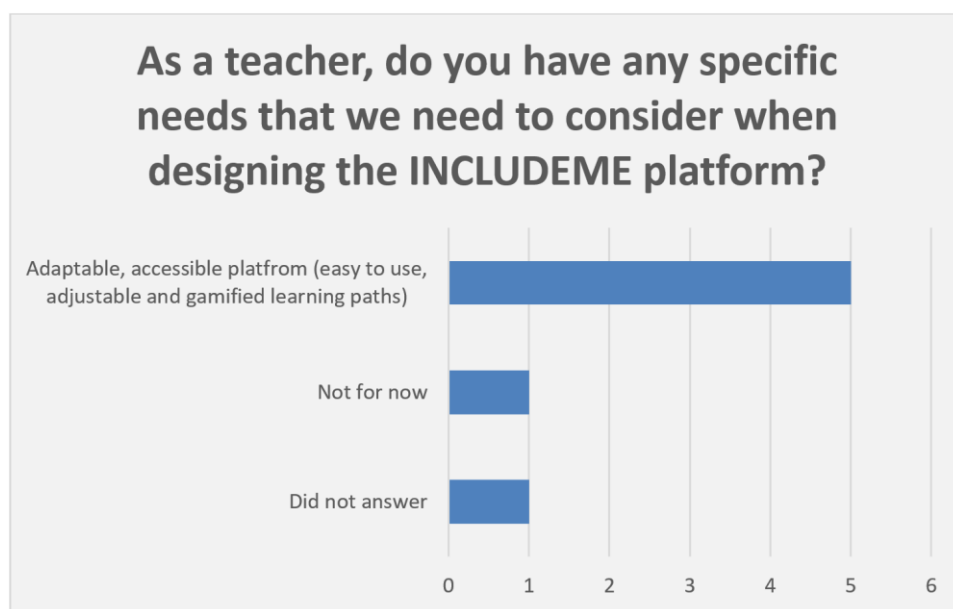


Figure 15. As a teacher, do you have any specific needs that we need to consider when designing the INCLUDEME platform?

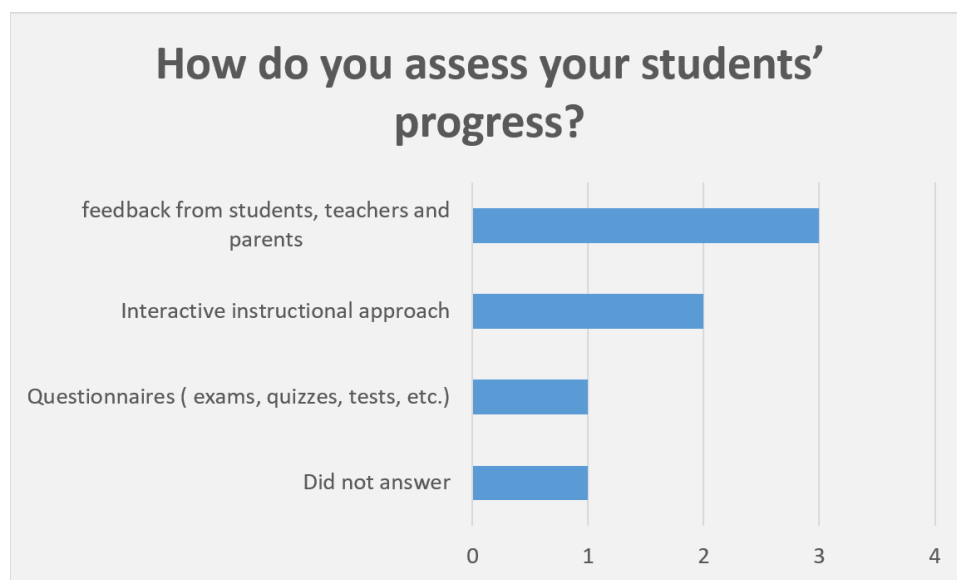


Figure 16. How do you assess your students' progress?

Then the teachers were asked about how they assess their students' progress. Some of them replied that they use follow up questionnaires on training and check progress after the sessions. They also mentioned that they assess coursework, take formative quizzes/tests, and use an interactive instructional approach to receive ongoing feedback and final exams. They use observation scales, feedback from students, parents, other teachers and also use progress sheets which include results of observation or evaluation tests etc. The assessment is mainly based on observation of students' behavior.

The next question was about which disabilities the INCLUDEME project should provide support for. Most of the participants mentioned Dyslexia and Autism, which must be considered in the project. Some participants answered that INCLUDEME should target as many disabilities as possible. Figure 17 shows the mixed responses from the participants. Mental Illness was important for 28.6% teachers while locomotors disability, ADHD, leaning disability, speech and language disability are a point of concern for them as well. While participants also indicated behavioral and emotional disturbances, upper limb physical disability and visual impairments should be also be considered. In short Dyslexia and Autism are suggested as the major disability which the project must provide support for according to the graphs in Figure 17.

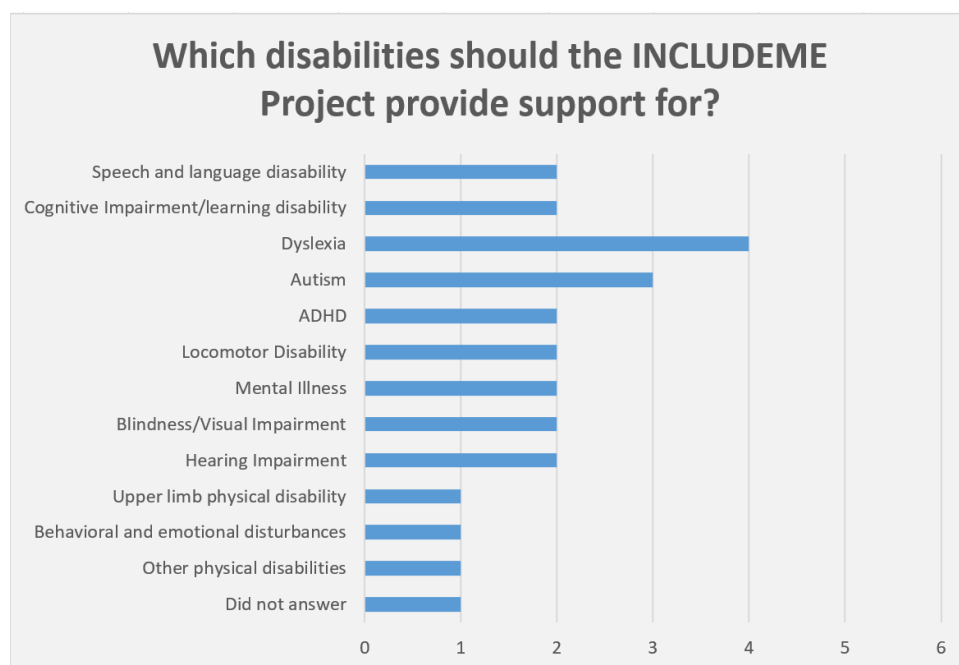


Figure 17. Which disabilities should the INCLUDEME Project provide support for?

3.3 Analysis of the semi-structured interviews

From the online survey, we got the clear idea of the questions that were needed to be asked in the semi-structured interviews. In the perspective of INCLUDEME development, there were four important aspects which were to be explored and asked in more detail from the participants. The overview of these aspects are as follows:

- Factors which prevent the engagement of disadvantaged learners and what kind of resources would be most suitable to engage them and why?
- Expectations and needs in terms of INCLUDEME support material.
- Needs to be considered while designing INCLUDEME platform.
- Techniques for the assessment of learners and suggestions for INCLUDEME platform

In this sub-section, the analysis has been carried out for the semi-structured interviews from each participant. Based on this analysis, a comparison of differences between stakeholders is also presented. As quoted earlier, seven participants within the consortium and two participants from external organizations took part in the semi-structured interviews. Therefore, there were a total of nine interview sessions having duration of 45 minutes each. The analysis of the semi-structured interviews from the individual participants and their comparison is summarized as follows.

3.3.1 Individual Interviews

Participant 1 – Hand Free Computing (HFC)

The stakeholder was involved in training adults on assistive software (read, write text help tools and speech recognition software etc.) for almost 12 years and currently working as a software developer to create online developing technologies and assistive games. The participant mentioned that lack of

confidence is the main reason which prevents disadvantaged learners from engaging. There is a lack of confidence among teachers and parents to use the modern technology. This could provide the basis to develop good confidence among disadvantaged learners for the learning procedures within the project. Serious games could be the most suitable resource to engage disadvantaged students. Among current learning resources for students, accessibility tools are available which were developed in the Beaconing project to provide accessibility to everyone and speech recognition software to help people with visual impairments. However, there are no proper guidelines to use and handle such technologies in training sessions. As INCLUDEME support material, there should be a ticketing system to track the progress of the tasks and projects. The participant said that the quality of hardware and the internet connection is the main problem related to the use of IT in the organization. While designing the INCLUDEME platform, there is a need that the Platform should be colorful, not like a boring PowerPoint interface. There should not be flashy images. UI should be interactive and easy to use. Regarding the assessment of students', they use pre-defined survey questionnaires after the training sessions which depicts how much the students have learned from the training sessions.

Participant 2 – PA College (PAC)

This particular stakeholder has 8 years of teaching experience and has taught students with dyslexia. According to the comments from this participant, lack of access is the main reason which prevents disadvantaged learners from engaging. In addition, there might be a cultural factor at hand e.g. disadvantaged learners from small towns or villages who have financial hardships; they do not get motivation from their parents to engage themselves in the learning activities as the parents do not have proper knowledge of importance of the modern interactive methods of learning. The age group of disadvantaged learners decides the type of learning resource to engage them e.g. for children, games are suitable for their engagement in learning activities but for adults, some serious approach or gamified learning tools could be used. INCLUDEME project should provide tutorials as a support material because there is a need to educate teachers, there should be presentations and a support role to convince teachers to use new technologies. Regarding the use of IT in schools, there are always internet connectivity problems. UI of the INCLUDEME platform should be flexible, it should be easy to make changes in it, addition or deletion of the options should be possible, it should be a dynamic tool. UI should be adaptive according to the special need learners. There is a need to develop new games and gamification techniques because they are very effective in teaching special need learners. Regarding the assessment of students, use of oral examination for students having dyslexia is common in order to avoid the writing part for them. The participant suggested to consider autism, dyslexia and mental disabilities in the INCLUDEME project.

Participant 3 – PA College (PAC)

This participant has 12 years of teaching experience. It was explained by the teacher that the lack of training in using blended teaching methods is the reason which prevents engagement of students in the learning process. Teachers do not know how to better teach their students and get them involved. Teachers should try to engage them. Also, learning environment is another reason which might prevent specific need students from engaging e.g. we got an example of an Autistic student who performed exceptionally well in an online demo scenario rather than onsite scenario which highlights that every student is different and feel comfortable in different situations - therefore providing the means to present in different ways could be the way forward to help those with special

needs. The teacher mentioned that game, gamified learning path and any other learning resources; all can be used easily by their students and are equally effective because they are all Computing students. But the students need time and space to perform well and the motivation from the teachers to engage them in learning. They use different games and online tools while teaching their students (ProLabview, CyberSee and Answergarden etc.). There are no difficulties in using these technologies except the engagement of their students. In terms of INCLUDEME support material; there is an expectation of a pool of games covering subjects in the discipline of Computing and proper channels for teachers to educate special needs students to use them adequately. There are issues in internet connectivity and minor problems which include screen sharing during online session etc. INCLUDEME Platform should be flexible enough to be incorporated in different subjects in different languages (that is critical). In addition, there should be resources related to disabilities, the project should provide accessibility options e.g., text to speech options. The performance of students is assessed by a combination of assignments and examinations; the teacher follows an interactive kind of approach during classes.

Participant 4 – PA College (PAC)

The stakeholder has more than 10 years of teaching experience. The engagement of disadvantaged learners is depended on two aspects. One is institutional and the second is personal aspect. Institutional aspect: It refers to the things related to the infrastructure, and technologies which institution offers to the students. Access of technology might be the reason for disadvantaged learners to engage themselves and enable themselves to behave like normal students. Personal aspect: Due to low confidence they are not able to engage themselves in the learning process like normal students; it is related to what kind of support they get from their families. In short, lack of access to technology and cost of those technologies prevent the disadvantaged learners from engaging. Gamified learning paths could be a more effective approach to engage the learners as compared to that of other learning resources. At the institute, they use online platforms like LMS, Moodle. That is common for both normal and disabled students. They face no difficulties in using these technologies and the use of IT in schools but there are not enough resources available to prepare the quality content for the classes. In terms of INCLUDEME project, there should be different kinds of resources available to involve disabled students in the class to increase their learning opportunities, and they should have access to the same resources than normal students. There should be hands on/software/tools to train teachers on how to effectively teach disabled students.

Participant 5 – Advanced Technology Systems (ATS)

The participant has more than 15 years of experience in teaching. In reference to the question about factors preventing the engagement of disadvantaged learners, the teacher explained that the situation of disadvantaged learners very much connects with the budget (family budget). Families cannot afford e.g., tablet, laptops etc., and if school/college/university provide technology to their students, they are not able to continue working in the same fashion at home, this hinders their learning performance and it is again related to cost of technology. In addition, it is also important to provide the access to technology. The stakeholders mentioned that the gamified learning paths are more effective to engage disadvantaged learners in comparison with other learning resources because gamified learning path implies a story in it and it has clearly a narrative Path. It actually has a step by step story that the learner has to go through and for each step they are given some information on what they should be doing/challenge. Also, with the integration of mini games into

this gamified learning path it could be quite easy to engage learners and analyze their performance. They have tools which are not accessible. While looking into accessibility e.g., they have games for kids, learning English and other foreign languages tools, it is very difficult to design those tools because they need to be colorful to attract the general target group. In terms of INCLUDEME support material, it is very important to have documentation digestible. From the user perspective, there is a need of accessible gamified lesson paths and accessible mini games. There is a need to reduce long narrative documents and we need to focus on the target of this project which is accessibility. In addition, in terms of INCLUDEME platform design, it should be easy to use and easy to understand. We need to make accessibility more visible; accessibility features should be brought to the main page of applications and everyone should know about that.

Participant 6 – South West University (SWU)

The stakeholder has less than 5 years of experience. According to the comments during the semi-structured interview, lack of communication and interaction with the teachers by disadvantaged students actually prevents them from engaging in learning activities. If teachers have a positive attitude and make these students comfortable with them then they will share their needs and their learning process can be improved. The teacher also mentioned that video games as a resource would be interesting in specific cases such as mental health disorder as they might find it easier and more relatable to explore a very different game world as it is already what their daily experience is, living in a different universe. The participant had not much information regarding the available learning resources and the issues related to them as well as the use of IT at the institution due to lack of experience. In the INCLUDEME project, new games should be developed which are attractive and easy to use. The participant suggested the use of games for assessment of learners in which the assessment should be done using feedback after the game play and there should be score oriented tasks in the games.

Participant 7 – Asociația cultural-educativă Ambasadorii prieteniei

This participant had no experience of teaching disadvantaged as well as disabled students. In response to the question related to the engagement of learners, the participant said that it depends on the type of social exclusion; in addition, it depends on the type of activity or tools for the activity they use to accomplish their tasks, if they find those tools attractive for them, they will automatically engage themselves in learning. Among the learning resources, the participant did not know any specific resources, but it was mentioned that it is good to offer learners something that enhances their self-esteem and that they can do their tasks on their own with confidence. Regarding the learning resources available at the institute, the stakeholder said that they are reluctant to use the technology and IT is not their first choice. In terms of support material from INCLUDEME project, we should give something very specific to the special need learners according to their needs but it was not explained by the participant what that thing should be.

Participant 8 – CJRAE Dambovită

The stakeholder has less than 5 years of teaching experience. The teacher mentioned that the disadvantaged students do not have a wide horizon regarding education, do not want or do not think about continuing their studies and are reluctant to use technology, precisely for fear of breaking the devices or losing them. They do not know how to use the tools they receive from school. In addition,

there is lack of suitable learning places for students with disabilities which also trigger the impossibility of organizing activities in an optimal way. In response to the question regarding the type of learning resources, the participant explained that accessible educational games (mini-games) and resources are needed depending on the type of social exclusion among the learners, while gamified learning paths will offer teachers the opportunity to create or adapt educational content, according to the needs of the target groups, therefore both options of games and gamified learning paths are suitable for engagement of learners. There is software available which are used in teaching activities e.g. WordWorld Puzzles, etc. In terms of INCLUDEME support material, there should be training material which must be adaptive for teachers. There are teachers who need support to understand and use the technological resources, they need simple materials, tutorials and even online training interactive sessions. In perspective of designing INCLUDEME platform, there are some important functionalities that can be integrated into the INCLUDEME platform. These include dedicated areas for individual and group activities. There should be games (at individual level) which are not very loaded with stimuli; games that offer a reward system; games that allow the development of socio-emotional skills or psychic components that are less trained or affected (e.g., development of attention, memory, cognitive stimulation); short games that give the player the ability to quickly go through several levels, (at group level) games that facilitate interaction; games that have both an individual and a collaborative component. The teacher mentioned that the assessment phase is standard for games but must be adapted in order to not discourage students, it is important for the student to get used to the fact that they gave a wrong answer but the platform should offer compensatory rewards, in order not to discourage them. In addition, the platform can integrate an option to resume the assessment or try to solve something additional, at another level, not that complex.

Participant 9 – Special School Târgoviște

The participant is a teacher having over 10 years' experience. The teacher explained that the cost of technology is one of the main problems in engaging disadvantaged learners. It is important for them to have an environment in which they feel safe and integrated. They use educational games and consider these resources more effective if they were correctly written and adapted to the needs of learners. By using these games, there are problems identified which include: pronunciation; misspelling both grammatically and orthographically. There were no other problems related to the use of IT in their institution. In terms of INCLUDEME support material; there is a need to train teachers so that they could overcome the problem of integration within the educational environment for students with special needs. There must be the right technologies for students with social exclusions to help them understand the subject taught; the educational content must be adapted to their needs. In the perspective of INCLUDEME platform, the content must be adapted according to the development level of each student, there should be the possibility for the student to be able to record and listen later in order to understand what he or she did wrong (e.g., the use of the voice recorder has been identified as a very good method of learning) and dedicated areas for individual activities but also for group activities. The assessment process for special need students is more complex as compared to that of normal students; the evaluation of special need learners is mainly based on observation of their behavior, an option that can be implemented in the platform would be the progress sheets where teachers can complete their observations.

3.3.2 Comparison of differences between stakeholders based on semi-structured interviews

In this subchapter, the analysis has been done to see the commonalities and differences in what participants said in the subsequent interviews after the online survey. Therefore, using the analysis of online survey and the subsequent interviews, the tables of needs and requirements will be summarized in the next section.

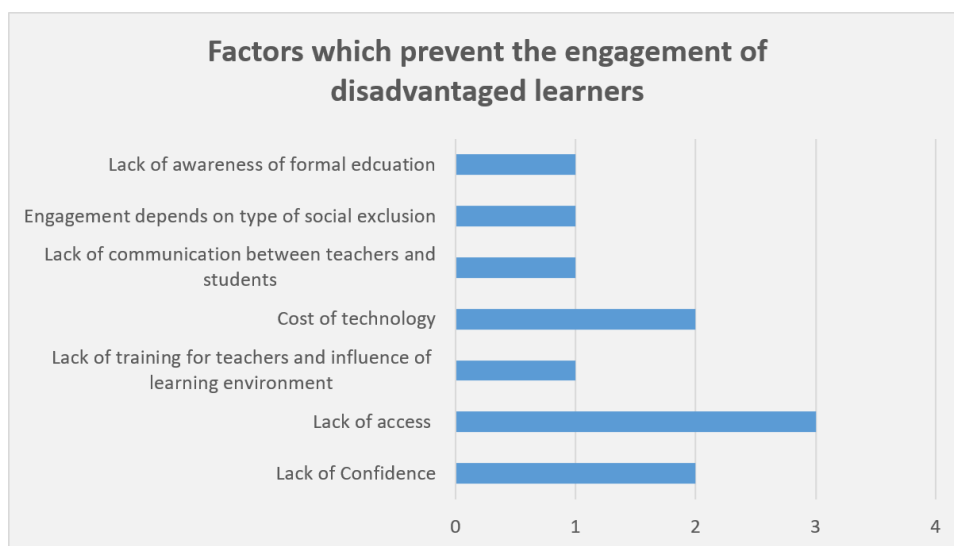


Figure 18. Factors which prevent the engagement of disadvantaged learners

Figure 18 explains the factors that were highlighted by stakeholders in reference to the question about the engagement of disadvantaged learners. We got mixed reviews from the participants. The 33.3% teachers mentioned that lack of access to the technology is the main reason in this context. Cost of technology is the reason to prevent the engagement in reference to the answer by two participants. In addition, 22.2% participants reported lack of confidence. Stakeholders stated other answers such as lack of awareness of formal education, lack of communication between teachers and students, lack of training for teachers and the learning environment influence the engagement of disadvantaged learners in the learning procedures. The 11.1% participants also said that it depends on the type of social exclusion which decides these factors.

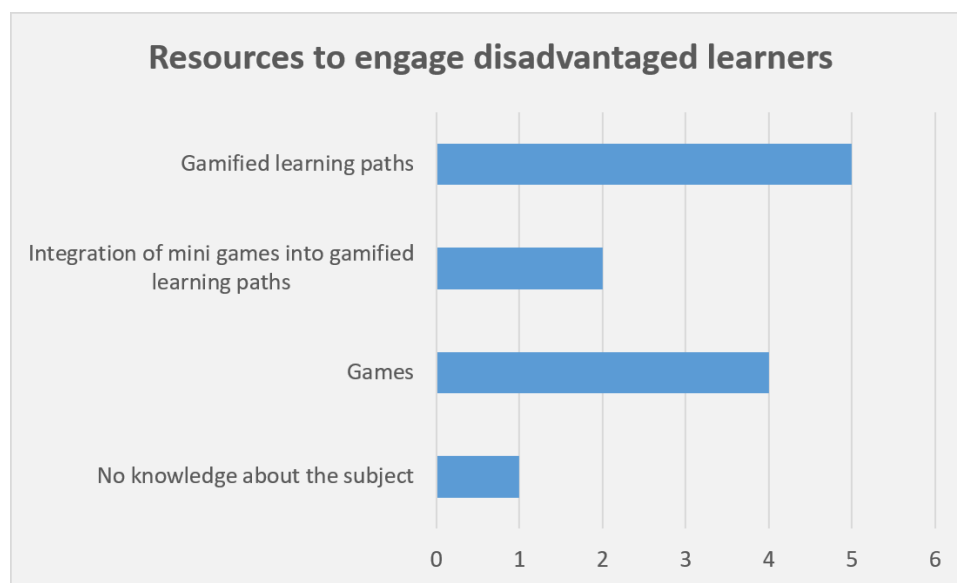


Figure 19. Resources to engage disadvantaged learners

Figure 19 depicts the response of stakeholders regarding the resources suitable to engage the disadvantaged learners. The majority of participants said gamified learning paths were the most effective approach for engagement. The 22.2% teachers said that by integration of mini games into this gamified learning path it could be quite easy to engage learners and analyze their performance. Other participants mentioned games as the suitable resource and 11.1% participants had no knowledge about this topic due to lack of experience in this perspective.

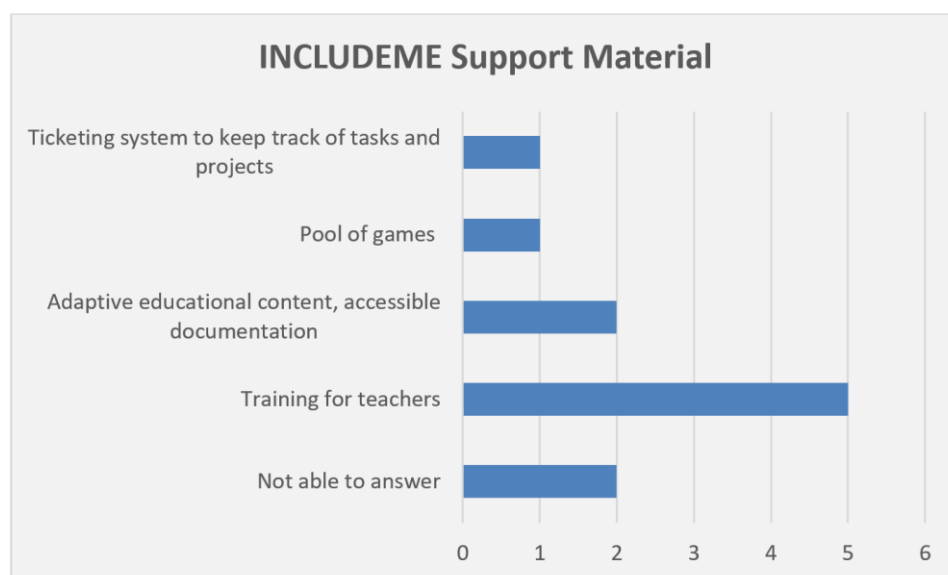


Figure 20. INCLUDEME support material

In Figure 20, the comparison has been shown for INCLUDEME support material. A greater ratio of participants (five teachers out of nine) emphasized the training for teacher as the need which must be considered in this project. The 11.1% teachers revealed that there should be pool of games in the subjects of Computing discipline, another participant said there was a need for a ticketing system (support desk) to track the progress of tasks and projects. A couple of participants did not have much

information in this particular context and couple of them mentioned adaptive educational content and accessible documentation which should be provided in terms of INCLUDEME support material.

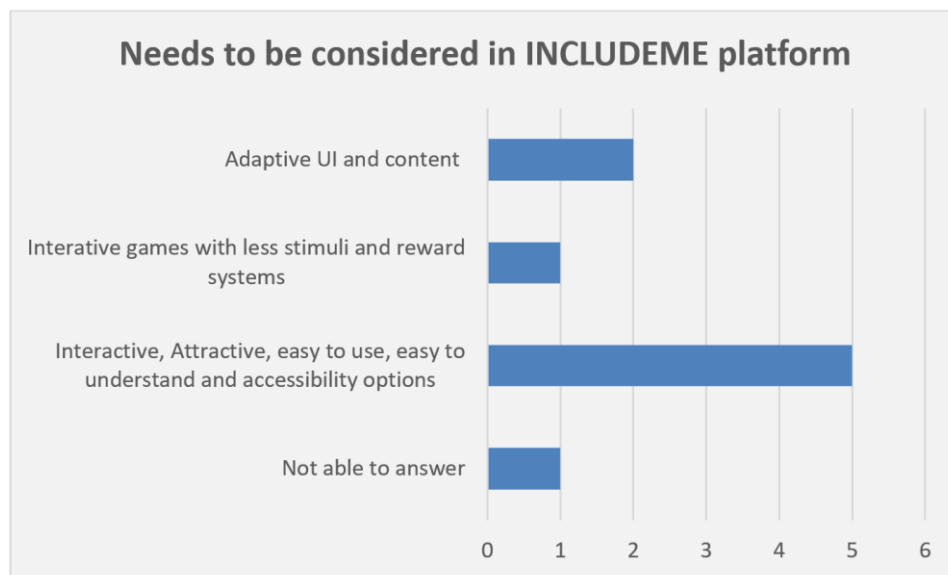


Figure 21. Needs to be considered while designing INCLUDEME Platform

Figure 21 shows the needs to be considered while designing INCLUDEME platform. The majority of teachers mentioned that the platform should be interactive, attractive, easy to use and understand. Accessibility options must be considered. The 22.2% of participants said that the UI should be adaptive in terms of its content. The 11.1% of the participants were not able to explain clearly due to lack of knowledge and experience. The 11.1% teachers also said that there should be interactive games which should not be loaded with too much stimuli, there should be games having reward systems in them.

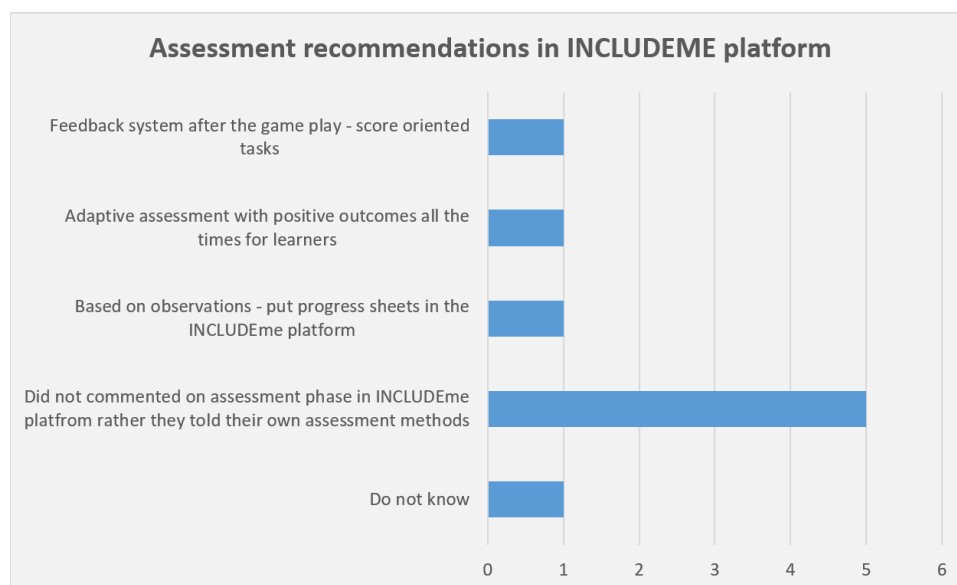


Figure 22. Assessment recommendations in INCLUDEME Platform

It was also asked from the teachers how they assess their students' performance. We got different answers from them which were including the use of exam, quizzes and assignment systems. Some used an oral examination approach for dyslexic learners etc. Apart from their assessment methods, 33.3% teachers also commented about the inclusion of assessment phases in the games which will be designed in the INCLUDEME platform. They explained that games in the INCLUDEME platform should have score-oriented tasks and there should be a feedback system after the game play to know the knowledge gain of players. The player should always get a positive outcome after the game play so that they are not discouraged. In addition, there should be progress sheets to observe the performance of players.

In the end, some open-ended questions were asked from the participants during the online interviews regarding the use of gamification and game-based learning. Most of them answered that the games and gamified learning paths are a good way of engaging students because most of the time students get bored of traditional teaching methods, such as lectures. Therefore, the use of games to teach them will be very effective and encouraging for them so they do not fear using such new techniques. They will always be happy to incorporate these technologies in their curriculum. However, a challenge would be to create accessible games. In addition, a bigger challenge is to make games easy and simple.

4 REQUIREMENTS

Chapter 4 includes two tables to visualize the requirements gathered from the online survey and semi-structured interviews. Table 1 demonstrates an overview of all needs while Table 2 highlights the requirements with the highest priority.

Table 1. An Overview of all Needs

S.No.	Participants	Needs for Engagement of disadvantaged learners	Games and Gamified learning paths	INLCUDEME Support Material	INLCUDEME Platform Needs
1	P1	<ul style="list-style-type: none">-Need to overcome lack of accessibility options for people in villages.-Disadvantaged learners from the villages do not get motivation from their homes for engaging them in learning activities.	<ul style="list-style-type: none">-There is a need to develop games for children and for adults gamified learning paths.	<ul style="list-style-type: none">-There is a need to educate teachers, educators (tutorial presentations to teach the usage of tools).	<ul style="list-style-type: none">-There is a need to develop games and gamification techniques in the platform.
2	P2	<ul style="list-style-type: none">-Teachers need to have variety of ways to teach and engage students in the learning process and should use methods to get feedback from them.	<ul style="list-style-type: none">-There is a need to provide knowledge and training to the teachers so they know about disabilities according to the needs of their students.	<ul style="list-style-type: none">-Need for pool of games covering different subjects.	<ul style="list-style-type: none">-Platform should be flexible enough to accommodate different subjects in different languages.-Platform should provide accessibility options e.g., text to speech options.
3	P3	<ul style="list-style-type: none">-Need to ensure access to technology	<ul style="list-style-type: none">-Need to generate games to		<ul style="list-style-type: none">-There should be multiple kinds of

D1.1 INCLUDEME Stakeholder Requirements



		by institutions and need to increase the level of confidence among disadvantaged learners. -Overcome the issues of cost of technology.	engage the students.	N/A	resources like software, mini games or tools available and to provide accessibility resources for disabled students.
4	P4	-Need to overcome the lack of communication and interaction with the teachers, which prevents them from engaging.	-There is a need to provide gaming resources to the students with special needs.	N/A	-There should be games which should be attractive and easy to use.
5	P5	-There is a need to define the type of disability/type of learners and then the type of tools.	-There is a need to provide special needs learners with something, which they can use with confidence.	-Need to develop according to the specific needs of target group	N/A
6	P6	-Need to increase the awareness of the importance of formal education. -Need to make awareness about the use of technology. There is also need to increase the dedicated learning spaces for disadvantage group.	-Need to develop accessible games and learning resources depending on the type of disability. -Need development of gamified lesson plans that will offer teachers the opportunity to create or adapt educational content.	-Training material needs to be adaptive for the teachers.	-There is a need for dedicated areas for individual activities but also for group activities. -There should be simple games, which are not loaded with stimuli. These games should be short and could give players the ability to quickly go through several levels.

					-There should be the element of collaboration in games during group activities.
7	P7	-Need to overcome the cost of technology issues for disadvantaged group.	<p>-Need to develop educational games, which are correctly written and adapted for the special needs.</p> <p>-There is a need to develop a game that contains proper grammar and spellings in the textual information.</p>	-Training for teachers, there is a need to give importance to the issues which could improve integration in the educational environment.	-Need to have dedicated areas for individual activities but also for group activities.
8	P8	<p>-There is a need to increase the confidence among teachers to implement new systems.</p> <p>-Need of gamification, gamified learning methods in class.</p> <p>-Need to provide access at home for disadvantage families.</p> <p>-Need to increase the knowledge of parents about the disabilities in their</p>	-There is a need that the context of serious games should be strong, storyline should be exciting, and the context of games should be changeable according to the subject.	-There is a need of a ticketing system to track the progress of tasks and project.	-There is a need that the Platform should be colourful, not like a boring PowerPoint interface.

D1.1 INCLUDEME Stakeholder Requirements



		children.			
9	P9	<p>-Need to cater for the cost issues, which disadvantaged families have.</p> <p>-There is a need to provide students with the access of technology.</p> <p>-For accessibility, there is a need to overcome the lack of awareness in people. We need to provide teachers with the information and tools so that they can easily teach.</p>	<p>-Need to develop gamified learning paths with the integration of mini games.</p>	<p>-Need for proper documentation.</p> <p>There is a need to reduce long narrative documents.</p>	<p>-There is a need to put accessibility upfront. The platform should be easy to use and easy to understand.</p>

Table 2. An Overview of Requirements

S.No.	Participants	Disabilities INCLUDEME Provide Support	Games and Gamified Learning Paths	INCLUDEME Platform Design
1	P1	-Mental Disability -Autism -Dyslexia	-Game should provide support for mental disability, autism and dyslexic users. -Game must provide proper and short textual information on screen to help user in playing. -Game must include bright colours like green, blue, yellow etc., which could be attractive for its players.	- Platform should include tool for teachers and this tool could include presentations, tutorials etc which could be used to educate teachers.
2	P2	- Autism -Dyslexia	-Game should provide support for Autism and Dyslexic users. -Game should allow user to play in different languages. Users should be provided with different languages, which they could select and play easily.	-Platform should provide accessibility options e.g. text to speech options.
3	P3	-Autism -Hearing Problems -Locomotors Disability -Dyslexia	-Game should provide support for Autism, hearing problems, locomotors disability and dyslexic users. -Game must include UI elements that could be engaging for users like (colourful buttons, simple animations etc.).	- The platform should have available resources so (tutorials, videos) teachers could inform themselves about the effective use of tool.
4	P4	-Mental Health	-Game must provide support for users with mental problems.	N/A

		Problems.	-Game must be simple with easy navigation and textual information should be displayed properly and it must not be too much.	
5	P5	- Sight Disabilities	-Game must be developed for sight disabilities. -Games must provide interface (using appropriate colours scheme mainly for red-green blindness and blue-yellow blindness) with which colour blind people can play.	N/A
6	P6	-Cognitive Disabilities -Delays in Language Development - ADHD - Autism Spectrum	-Game must include short mini games. There should be the element of collaboration in these mini games where users could make with other players.	- There must be separate individual activities and also group activities in one platform. - Platform must provide support for proper and adaptive training material for teachers.
7	P7	-Mental Disabilities (All Forms) -Learning Difficulties	- Games should be short and not with too many scenes. -Game must not have long textual information that could be hard for users to read. -There must be the possibility to keep track of user's activities in case they want to improve during playing.	- Platform must have dedicated areas for individual activities but also for group activities in platform.

8	P8	<ul style="list-style-type: none"> -Dyslexia -Autism -Visual Impairment -Physical Impairment 	<ul style="list-style-type: none"> -Game should be colourful. - Interface should not include flashy images. It needs to look good but not very busy. - UI should be more interactive. Buttons should have text so that learners know how to use and could navigate easily while playing but not too much information keeping visual and hearing impairment in mind. Simple and interactive. 	<ul style="list-style-type: none"> - Platform should be interactive with simple animations where user could play easily.
9	P9	<ul style="list-style-type: none"> -Hearing Disabilities - Dyslexia - Mental Disabilities 	<ul style="list-style-type: none"> -Gamified learning paths with mini games. -Game must be simple with proper selection of colours not too bright. -Game must not be too complicated to play and to navigate. 	<ul style="list-style-type: none"> -Platform should provide and keep accessibility at forefront.

5. CONCLUSIONS

This deliverable presents the needs and the requirements of the teachers. So far, nine teachers have responded. They mainly indicated Autism and Dyslexia as the common disability among their students and these disabilities must be considered in addition to the disadvantaged learners while designing INCLUDEME platform.

Looking at the responses from the teachers, it is found that there is a need to increase the confidence among teachers and parents regarding the use of modern technologies. This could provide the basis to develop confidence among disadvantaged children in learning procedures because a lack of confidence is the main reason to prevent their engagement. In this perspective, 88% of stakeholders mentioned gamified learning paths as the suitable learning resource for engaging the disadvantaged learners and mini games could be integrated with these gamified learning paths to engage learners and analyse their performance. The main learning technologies used by teachers are assistive software and there is a requirement for these tools to be accessible to everyone. This includes being easy to use in terms of graphics, UI, user experience, textual information, and the hints and tips to use tool should be user friendly and not too over whelming. In addition, these learning tools should be engaging and interactive to use. Teachers mentioned that there is a need to first define the target groups (disability) and then look for development of particular learning tools for them.

Regarding the INCLUDEME support material, stakeholders quoted that there should be learning software (pool of games) to assist special need students and a support desk to assist the participants in using those learning technologies. In addition, there should be accessible documentation. Teachers access their students' performance by exams, quizzes and use interactive approaches during their lectures. In addition, they have enough resources to prepare the quality content for their classes.

However, regarding INCLUDEME platform, teachers mentioned some needs. They said that it should be user friendly and interactive to gain attention of the player and to keep motivation to play it. There should be the kind of resources available to involve disabled students in the class to increase their learning opportunities and they should have access to those resources. There is a need to explain how to create accessible documents and give teachers a guide, which is easy to use. In terms of platform, accessibility options should be more visible. The teachers mentioned games as the convincing approach to keep their students motivated in learning procedures but the problem will be to create accessible games. Therefore, there is a need to think about such games for disadvantaged and disable learners.

To summarize the final developmental requirements, it was found that games should provide support for autism followed by dyslexia and cognitive impairments. The games should be colourful, must not be too complicated to play and to navigate. There should be gamified learning paths with inclusion of mini-games in them emphasising collaboration between users. Games should allow users to play in different languages. In terms of INCLUDEME platform design, it should include tools for teachers and this tool could include adaptive presentations and tutorials etc. to train them. The platform should also provide accessibility options e.g. text to speech options etc. It must have dedicated areas for individual activities but also for group activities and should be interactive with simple animations where user could play easily.

6. REFERENCES

1. De Jonckheere M, Vaughn LM. Semi-structured interviewing in primary care research: a balance of relationship and rigour. *Family Medicine and Community Health* 2019; 7: e000057. doi: 10.1136/fmch-2018-000057
2. Hesse-Biber, Sharlene and R. Burke Johnson (2015). *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry*. Oxford University Press.
3. Regmi, P. R., Waithaka, E., Paudyal, A., Simkhada, P., & Van Teijlingen, E. (2016). Guide to the design and application of online questionnaire surveys. *Nepal journal of epidemiology*, 6(4), 640.